DOCUMENT RESUME

ED 432 542 SP 038 658

AUTHOR	Boe, Erling E.; Bobbitt, Sharon A.; Cook, Lynne H.; Barkanic, Gema; Maislin, Greg
TITLE	Sources of Supply of Teachers for Eight Cognate Areas: National Trends and Predictors. Data Analysis Report No. 1998-DAR2.
INSTITUTION	Pennsylvania Univ., Philadelphia. Center for Research and Evaluation in Social Policy.
SPONS AGENCY	Department of Education, Washington, DC.
PUB DATE	1998-11-30
NOTE	86p.
CONTRACT	HO23C40102-95
PUB TYPE	Numerical/Quantitative Data (110) -- Reports - Research (143)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	*Career Development; Elementary Secondary Education; Employment Patterns; *Labor Turnover; *Public Schools; Teacher Characteristics; Teacher Employment; Teacher Qualifications; *Teacher Supply and Demand; Teachers; Teaching Conditions; Teaching Experience; *Teaching (Occupation)

ABSTRACT

This report contains national trend and predictor data for the supply of public school K-12 teachers in eight cognate areas: general elementary education; mathematics and science education; language education; social studies education; arts, physical, and health education; business and vocational education; other general education; and special education. Data came from three large national probability samples of teachers taken over 6 years. The main data source was the Public School Teacher Questionnaires of the Schools and Staffing Surveys (SASS) of the National Center for Education Statistics. Data reveal major trends in those aspects of teacher career paths associated with entering, and continuing in, the ranks of employed public school teachers. Data also reveal variables associated with teachers' career path transitions. A parallel Data Analysis Report from the University of Pennsylvania's Center for Research and Evaluation in Social Policy provides similar data on trends and predictors of teacher turnover. Data from the SASS indicate whether entering teachers had previous teaching experience and whether they were fully certified in the main teaching assignment into which they were hired. Data on demographics, qualifications, teaching assignment, and working conditions also come from the SASS. The report summarizes study findings. Descriptive tables comprise the bulk of the report. An appendix presents data sources, the teacher sample, and data analysis procedures. (Contains 12 references.) (SM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 432 542

SOURCES OF SUPPLY OF TEACHERS FOR EIGHT COGNATE AREAS: NATIONAL TRENDS AND PREDICTORS[1]

Data Analysis Report No. 1998-DAR2

Erling E. Boe, Ph.D.
Professor of Education
Graduate School of Education
University of Pennsylvania

Sharon A. Bobbitt, Ph.D.
Senior Educational Statistician
National Center for Education Statistics
U.S. Department of Education

Lynne H. Cook, Ph.D.
Professor of Special Education
Department of Special Education
California State University, Northridge

Gema Barkanic, B.A.
Research Specialist
Graduate School of Education
University of Pennsylvania

and

Greg Maislin, M.S., M.A.
Principal Biostatistician
Biomedical Statistical Consulting

Center for Research and Evaluation in Social Policy
Graduate School of Education
University of Pennsylvania
3700 Walnut Street
Philadelphia, PA 19104

November 30, 1998

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

E. Boe

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

SP038658

[1]Support for this research was provided by grant (Award Number H0 23C40102-95) from the Research in Education of Individuals with Disabilities Program (CFDA Number: 84-023C), Research to Practice Division, Office of Special Education Programs, the U.S. Department of Education to Erling E. Boe at the University of Pennsylvania; by the National Center for Education Statistics, the U.S. Department of Education; and by the Center for Research and Evaluation in Social Policy, the Graduate School of Education of the University of Pennsylvania.

BEST COPY AVAILABLE

DATA ANALYSIS REPORTS

Data Analysis Reports are a means for rapid dissemination of the results of data analyses in tabular and graphical form with minimal description and discussion. These results may later be used as the basis for fully-developed research reports, policy briefs, journal articles, and/or other modes of dissemination.

TABLE OF CONTENTS

	Page
Data Analysis Reports	ii
Table of Contents	iii
List of Tables	v
Introduction	1
Summary Results	3
Trends in Teacher Supply	3
1. Demand for Entering Teachers	3
2. Trends in Continuing Teachers: Established vs. Transitional	3
3. Trends in Entering Teachers: First-Time vs. Experienced	4
4. Trends in First-Time Teachers with Teacher Preparation Majors	4
5. Trends in Entering Experienced Teachers	5
6. Trends in Entering First-Time Teachers Who Are Recent Graduates	5
7. Trends in Irregular/Part-Time Teachers	6
8. Partly Certified Teachers	7
9. Summary of Trends in Teacher Supply	9
Predictors of Teacher Supply	10
10. Teacher Characteristics Variables	10
11. Teacher Employment Variables	10
12. Teacher Characteristics Variables Predictive of Continuing Teachers	11
13. Teacher Employment Variables Predictive of Continuing Teachers	11
14. Logistic Regression Models for Continuing vs. Entering Teachers	11
15. Logistic Regression Models for Continuing Teachers by Region	12
16. Logistic Regression Models for Experienced vs. First-Time Teachers	12
17. Logistic Regression Models for Established vs Transitional Teachers	13
18. Summary of Predictors of Teacher Supply	14
Tables	15
References	44

Appendices

A. Data Analysis Methods 45

Data Sources 45

Public School Teacher Questionnaire: Schools and Staffing Surveys ... 45
Sources of the Community Type Variable 45

Teacher Sample 46

Procedures 46

Descriptive Trends in Teacher Supply: Tables 1 20 46
Logistic Regression of Teacher Supply: Tables 21 - 29 46

B. Glossary 52

LIST OF TABLES

Page

I. Trends in Teacher Supply

Table 1. Sources of Supply of Total Public School Teachers: National Estimates of the Percentages of Teachers by Six Supply Sources by School Year 15

Table 2. Sources of Supply of Total Public School Teachers for Eight Cognate Areas: National Estimates of the Percentages of Teachers by Six Supply Sources for School Year 1987-88 16

Table 3. Sources of Supply of Total Public School Teachers for Eight Cognate Areas: National Estimates of the Percentages of Teachers by Six Supply Sources for School Year 1990-91 17

Table 4. Sources of Supply of Total Public School Teachers for Eight Cognate Areas: National Estimates of the Percentages of Teachers by Six Supply Sources for School Year 1993-94 18

Table 5. Sources of Supply of Entering Teachers in Public Schools: National Estimates of the Percentages of Teachers by Prior Teaching Experience and Degree Major for Three School Years 19

Table 6. Sources of Supply of Entering Teachers in Public Schools for Seven Cognate Areas: National Estimates of the Percentages of Entering Teachers by Prior Teaching Experience and Degree Major for School Year 1987-88 20

Table 7. Sources of Supply of Entering Teachers in Public Schools for Seven Cognate Areas: National Estimates of the Percentages of Entering Teachers by Prior Teaching Experience and Degree Major for school Year 1990-91 21

Table 8. Sources of Supply of Entering Teachers in Public Schools for Seven Cognate Areas: National Estimates of the Percentages of Entering Teachers by Prior Teaching Experience and Degree Major for School Year 1993-94 22

Table 9. Sources of Supply of Entering Teachers in Public Schools: National Estimates of the Percentages of Teachers by Prior Teaching Experience and Delay of Entry for Three School Years . . 23

BEST COPY AVAILABLE

Table 10. Sources of Supply of Entering Teachers in Public Schools for Seven Cognate Areas: National Estimates of the Percentages of Entering Teachers by Prior Teaching Experience and Delay of Entry for School Year 1987-88 24

Table 11. Sources of Supply of Entering Teachers in Public Schools for Seven Cognate Areas: National Estimates of the Percentages of Entering Teachers by Prior Teaching Experience and Delay of Entry for School Year 1990-91 25

Table 12. Sources of Supply of Entering Teachers in Public Schools for Seven Cognate Areas: National Estimates of the Percentages of Entering Teachers by Prior Teaching Experience and Delay of Entry for School Year 1993-94 26

Table 13. Irregular/Part-Time Teachers in Public Schools: National Estimates of the Percentages of Total Teachers Who Held Irregular/Part-Time Positions by Eight Supply Sources by School Year . . 27

Table 14. Sources of Supply of Irregular/Part-Time Teachers in Public Schools for Eight Cognate Areas: National Estimates of the Percentages of Teachers Who Held Irregular/Part-Time Positions by Six Supply Sources for School Year 1987-88 28

Table 15. Sources of Supply of Irregular/Part-Time Teachers in Public Schools for Eight Cognate Areas: National Estimates of the Percentages of Teachers Who Held Irregular/Part-Time Positions by Six Supply Sources for School Year 1990-91 29

Table 16. Sources of Supply of Irregular/Part-Time Teachers in Public Schools for Eight Cognate Areas: National Estimates of the Percentages of Teachers Who Held Irregular/Part-Time Positions by Six Supply Sources for School Year 1993-94 30

Table 17. Partly-Certified Teachers in Public Schools: National Estimates of the Percentages of Total Teachers Who Were Partly Certified by Eight Supply Sources by School Year 31

Table 18. Partly-Certified Teachers in Public Schools for Eight Cognate Areas: National Estimates of the Percentages of Teachers Who Were Partly Certified by Six Supply Sources for School Year 1987-88 . 32

Table 19. Partly-Certified Teachers in Public Schools for Eight Cognate Areas: National Estimates of the Percentages of Teachers Who Were Partly Certified by Six Supply Sources for School Year 1990-91 . 33

Table 20. Partly-Certified Teachers in Public Schools for Eight Cognate Areas: National Estimates of the Percentages of Teachers Who Were Partly Certified by Six Supply Sources for School Year 1993-94 . 34

II. Predictors of Teacher Supply

Table 21. National Trends in Teacher Characteristic Variables: Percentage Distributions and National Estimates of the Numbers of Teachers in Public Schools for Three School Years (1987-88, 1990-91, 1993-94) 35

Table 22. National Trends in Teacher Employment Variables: Percentage Distributions and National Estimates of the Numbers of Teachers in Public Schools for Three School Years (1987-88, 1990-91, 1993-94) 36

Table 23. Teacher Characteristic Variables Associated with Continuing Versus Entering Teachers in Public Schools Nationally for Three School Years (1987-88, 1990-91, 1993-94) 37

Table 24. Teacher Employment Variables Associated with Continuing Versus Entering Teachers in Public Schools Nationally for Three School Years (1987-88, 1990-91, 1993-94) 38

Table 25. Predicting Continuing Versus Entering Teachers in Public Schools Nationally: Full Logistic Regression Models for Three School Years (1987-88, 1990-91, 1993-94) 39

Table 26. Predicting Continuing Versus Entering Teachers in Public Schools Nationally: Reduced Logistic Regression Models for Three School Years (1987-88, 1990-91, 1993-94) 40

Table 27. Predicting Continuing Versus Entering Teachers in Public: Schools: Reduced Logistic Regression Models for Four Regions of the United States Based on Data for School Year 1993-94 41

Table 28. Predicting Experienced Versus First-Time Teachers Entering Public Schools Nationally: Full and Reduced Logistic Regression Models Based on Data for School Year 1993-94 42

Table 29. Predicting Established Versus Transitional Teachers Continuing in Public Schools Nationally: Full and Reduced Logistic Regression Models Based on Data for School Year 1993-94 43

INTRODUCTION[1]

This report contains national trend and predictor data for the supply of public school teachers in eight cognate areas (i.e., groups of related main teaching assignment fields) at the K through 12 grade levels. The eight cognate areas included in these analyses were: general elementary education; mathematics and science education; language education; social studies education; arts, physical, and health education; business and vocational education; other general education; and special education. In contrast with other reports on the national supply of all public and all private school teachers (e.g., Rollefson & Broughman, 1994), this report (a) provides teacher supply data specifically for the eight cognate areas in public schools and (b) logistic regression analyses of predictor variables for several sources of teacher supply. The data were derived from three large national probability samples of teachers taken over a six-year period for school years 1987-88, 1990-91, and 1993-94. Thus, the trend and predictive data reported are based on the numbers of nationally estimated teachers in public schools. The main data source was the Public School Teacher Questionnaires of the Schools and Staffing Surveys (SASSs) of the National Center for Education Statistics (NCES), U.S. Department of Education. Data sources, the teacher sample, and data analysis procedures are described in Appendix A (Data Analysis Methods).

The descriptive data reported in Tables 1 through 20 reveal major trends (i.e., changes over time) in those aspects of the teacher career paths associated with entering, and continuing in, the ranks of employed teachers in public schools. Such transitions in teacher career paths include: entering public school teaching, reentering public school teaching by experienced teachers after a break in service, and becoming established (i.e., stable) in a teaching assignment as a continuing public school teacher.

The predictive data reported in Tables 21 through 29 reveal variables that are associated with such career path transitions of teachers. General categories of predictor variables analyzed by logistic regression methods include teacher demographic characteristics, teacher qualifications, teaching assignments, and teacher working conditions.

A parallel "Data Analysis Report" issued by the Center for Research and Evaluation in Social Policy, Graduate School of Education, University of Pennsylvania (Boe, E. E., Bobbitt,

---

[1]See Appendix B (Glossary) for definitions used in this report.

S. A., Cook, L. H., Barkanic, G., & Maislin, G., 1998), provides similar data on trends and predictors of teacher turnover--another major facet of the career paths of teachers.

The descriptive data on teacher supply for Tables 1 through 20 are based on the Public School Teacher Questionnaires of SASS. In this questionnaire, employed teachers during a particular school year were asked about their status during the prior year such as whether they were attending school, working in a non-teaching job, or employed as teachers in a public school. From answers to questions of this type, it is possible to determine which teachers had just entered the ranks of employed teachers from non-teaching activities during the prior year, and which teachers had continued as employed teachers from the prior year. More specifically, it is possible to determine whether entering teachers had previous teaching experience and whether they were fully certified in the main teaching assignment into which they were hired. Trend data on these, and related, aspects of teacher supply are presented in Tables 1 through 20.

The predictive data on teacher supply for Tables 21 through 29 are also based on the Public School Teacher Questionnaires of SASS. In this questionnaire, employed teachers were asked about their demographic characteristics (such as age, gender, race, marital status, and dependents), qualifications (such as certification status, educational background, years of teaching experience), teaching assignment by subject matter and level, and working conditions (such as employment status, salary, and type of community in which their school was located). Data on both the unadjusted and adjusted (by logistic regression) association of such predictor variables with various aspects of teacher supply are presented in Tables 21 through 29.

SUMMARY RESULTS[1]

All group differences and trends over time discussed and interpreted in the results described below are statistically significant at the .05 level or less. The exact probability level of many comparisons and trends are reported in the tables of results presented in this report.

Trends in Teacher Supply

1. Demand for Entering Teachers
   a. Overall: The demand for entering teachers to fill open positions in the entire employed teaching force in public schools has been stable at about the 6% level annually during the six year period from school year 1987-88 to 1993-94.[2] This stability in the annual entering teacher percentage has been attained in spite of growth in the public school teaching force by 225,000 full-time equivalent teachers during this six year period (Snyder, Hoffman, & Geddes, 1997)--a fact that demonstrates that the effective supply of both continuing and entering teachers grew by equivalent percentages to fill the demand for teachers almost entirely.[3] (See Table 1.)
   b. By Cognate Area: The demand for entering teachers in each of eight cognate areas has also been stable during the six year period from 1988 to 1994. However, the highest average annual demand occurred in special education during the six year period (about 8.2% of all special education teachers), while the lowest average annual demand occurred in business/vocational education (about 4.5% of all business/vocational teachers). (See Tables 2, 3, and 4.)
2. Trends in Continuing Teachers: Established versus Transitional
   a. Overall: The percentage of established teachers employed in public schools increased gradually from 73% in 1988 to 76% in 1994 (with, of course, a corresponding decline in transitional teachers). (See Table 1.) The trend toward more established teachers is promising because they are three times more likely to be fully certified in their main teaching assignment than are transitional teachers (see Table 17).

---

[2]Henceforth, school years in which SASS was administered will be identified as 1988, 1991, and 1994 because the SASS questionnaires were completed during the second half of a school year in early 1988, 1991, and 1994.

[3]Based on SASS data, the demand for teachers was almost entirely filled as indicated by the fact that unfilled and withdrawn teacher positions in public schools due to unavailability of teachers was only about 0.5% for school years 1990-91 (Choy, Henke, Alt, Medrich, & Bobbitt, 1993) and 1993-94 (Henke, Choy, Geis, & Broughman, 1996).

b. By Cognate Area: This trend toward a gradually increasing percentage of established teachers (with a corresponding decline in transitional teachers) is attributable to increasing percentages of established teachers in general elementary education and special education. No clear trend toward either increasing, or decreasing, percentages of established teachers was observed for the other six cognate areas. The highest level of established teachers occurred in business/vocational education, while the lowest levels of established teachers occurred in other general education and in special education.

3. Trends in Entering Teachers: First-Time versus Experienced

   a. Overall: Of entering teachers, the percentage of first-time teachers employed in public schools increased fairly sharply from 39.7% in 1988 to 61.9% in 1994 (with, of course, a corresponding sharp decline in entering experienced teachers). These two trends of increasing first time teachers along with decreasing experienced teachers suggests that the reserve pool as a source of supply of entering teachers is being depleted of its stock of experienced teachers who are available to become reemployed as teachers. (See Table 5.)

   b. By Cognate Area: The trend toward a sharp increase in the percentage of entering first-time teachers (with a corresponding decrease in entering experienced teachers) was seen in all seven cognate areas studied. Consistent and substantial differences over time among cognate areas in these trends were not observed. (See Tables 6, 7, and 8.)

4. Trends in Entering First-Time Teachers with Teacher Preparation Majors

   a. Overall: The trend toward a sharp increase in the percentage of entering first-time teachers, as noted in Section 3 above, is attributable both to increasing percentages of first-time teachers with degree majors in fields of teacher preparation and with degree majors in all other degree fields (including some teachers with no degree). (See Table 5.)

   b. By Cognate Area: This trend toward increasing percentages of both entering first-time teachers with degree majors in a field of teacher preparation, and other first-time teachers with degree majors in all other fields, was observed most clearly in general elementary education and special education. Though the other five cognate areas studied all experienced an overall increase in first time teachers, the increase was mostly due to one or the other type of degree majors. (See Tables 6, 7, and 8.)

5. Trends in Entering Experienced Teachers

   a. Overall: The trend toward a sharp decrease in the percentages of entering experienced teachers (as noted in Section 3 above), is attributable to decreasing percentages of such experienced teachers who reenter teaching after a break in service, while the modest percentages of entering teachers represented by private school teachers migrating to public schools has remained stable during the six year period studied. (See Table 5.)

   b. By Cognate Area: The trend toward a sharp decrease in the percentages of entering experienced teachers during the six year period from 1988 to 1994 was observed in all seven cognate areas studied. (See Tables 6, 7, and 8.)

6. Trends in Entering First-Time Teachers Who are Recent Graduates

   a. Overall: The trend toward a sharp increase in the percentage of entering first-time teachers in public schools (as noted in Section 3 above), is also attributable both to increasing percentages of first-time teachers who are recent graduates and delayed entrants. However, the increases in the percentage of delayed entrants was much greater, and, by 1994, delayed entrants accounted for 36.3% of all entering teachers while recent graduates accounted for only 25.6%. (See Table 9.) This trend toward a rapidly increasing percentage of entering teachers who are delayed entrants (instead of recent graduates or reentering experienced teachers) is regressive because delayed entrants are about twice as likely to lack full certification in their main teaching assignment than are either recent graduates or reentering experienced teachers (Boe, Bobbitt, Cook, & Terhanian, 1998).

   b. By Cognate Area: This trend toward increased hiring of first-time teachers of both the recent graduate and delayed entrant types was observed in all cognate areas studied except for special education. The percentage of entering teachers in special education who were recent graduates held steady at about 22% during the six year period from 1988 to 1994, while the percentage of delayed entrants increased from 9% in 1988 to 35% in 1994--the largest growth in the hiring of delayed entrants observed in the seven cognate areas studied. (See Tables 10, 11, and 12.) It appears that special education has been increasingly dependent on hiring these lesser qualified entering teachers in order to fill its open teaching positions. In 1990, 68% of delayed entrants hired in special education were not fully certified in their main teaching assignments (Boe et al., 1998).

7. Trends in Irregular/Part-Time Teachers. A public school teacher's employment status can be (a) regular (i.e., as a conventional teacher) versus irregular (i.e., as an itinerant or long-term substitute teacher), and (b) full or part time. Individuals who are appointed as full-time regular teachers are assumed to have the most desirable positions in terms of stability, pay, and prestige, while teachers who have irregular and/or part-time appointments are assumed to have less desirable positions. As described below, Tables 13 through 16 show the percentages of teachers who hold the less desirable positions (i.e., the percentage of irregular and/or part-time, or %Irreg./PT) as a function of source of teacher supply.

   a. Overall:

      (1) Of total public school teachers in 1994, 9.1% (or about one in every ten teachers) held irregular/part-time teaching positions, a level comparable to that in the previous six years. (See Table 13.)

      (2) During each of the three years studied, the percentage of entering teachers in public schools who held irregular/part-time teaching positions (18.0% in 1994) was over twice the percentage of continuing teachers (8.5% in 1994). While it is not surprising that continuing teachers have a competitive advantage over entering teachers in securing regular/full-time positions, the fact is that about one in five open teaching positions available to entering teachers was irregular and/or part-time. This certainly must detract from the appeal of entering teaching as a career, at least for the most highly qualified potential candidates for teaching appointments. (See the row totals of Tables 14, 15, and 16.)

      (3) Though no trend is evident during the six years from 1988 to 1994, it is clear that about twice the percentage of transitional teachers hold irregular/part-time positions than do established teachers (about 14% vs. 7%). While it is understandable that the more desirable positions will be held by teachers who have become established in their school and teaching assignment, it might seem surprising that even 7% of established teachers do not enjoy regular full-time employment--a fact that might contribute to much turnover in the teaching force. (See Table 13.)

      (4) As to entering teachers, there has been a considerable stability in the percentage of first-time teachers who are given irregular/part-time positions (a non-significant increase from only about 15% in 1988 to 17% in 1994), as well as in the percentage of entering experienced teachers who are given irregular/part-time

positions (a non-significant decrease from about 21% in 1988 to 19% in 1994). Thus, in 1988, entering first-time teachers were somewhat more favored than entering experienced teachers with regular full-time positions. However, the trends in employment status since then to 1994 have made entering first-time teachers equivalent to entering experienced teachers in the percentages (17% vs. 19%, respectively) to which they are given irregular/part-time positions. In view of the information reviewed above in Section 3, it is clear that the deterioration in employment status of entering first-time teachers occurred as their percentage of all entering teachers increased sharply, while the percentage of entering experienced teachers correspondingly decreased. It should also be noted that, by 1994, 18% of entering teachers were obliged to accept an irregular/part-time job, a level much higher than the 8.5% of irregular/part-time positions held by all continuing teachers. (See Table 13, and the row totals of Table 16.) The fact that so many entering teachers were not given full status in the sense of regular full-time appointments might contribute to difficulty in recruiting fully certified entering teachers (see Table 17), as well as the relatively high turnover of beginning teachers (Whitener, Gruber, Lynch, Tingos, Perona, & Fondelier, 1997).

b. By Cognate Area:

(1) There is great variability in the percentage of irregular/part-time positions across the eight cognate areas, which averaged about 9% during 1988, 1991, and 1994. Areas with very low Irregular/Part-time percentages in 1994 include general elementary education (2.6%) and social studies education (3.8%), while areas with very high Irregular/Part-Time percentages include arts/PE (24.4%) and other general education (26.7%). (See Tables 14, 15, and 16.)

(2) In other respects, each cognate area is similar to all teachers combined (as presented above) in terms of more entering teachers than continuing teachers had irregular/part-time positions and more transitional than established teachers had irregular/part-time positions. One difference from this pattern occurred in the other general education area in that, by 1994, about 25% of teaching positions were irregular/part-time for all sources of teacher supply (i.e., for continuing established and transitional, and for entering first-time and experienced). (See Tables 14, 15, and 16.)

8. Partly Certified Teachers. About 93% of public school teachers have been fully certified in their main teaching assignment as defined by holding a regular or standard certificate,

an advanced professional certificate, or a probationary certificate (a certificate for teachers who have satisfied all requirements for a regular certificate except for completing a probationary period). The other roughly 7% of teachers are therefore lacking this basic qualification for teaching, and are classified as partly certified in their main teaching assignments. As described below, Tables 17 through 20 show the percentage of teachers who are only partly certified (i.e., lacking a basic qualification for teaching).

a. Overall:

(1) Of total public school teachers in 1994, 7.5% were only partly certified in their main teaching assignments, a level comparable to that in the previous six years. (See Table 17.)

(2) During 1991 and 1994, the percentage of entering teachers in public schools who were partly certified in their main teacher assignments (26.8% in 1994) was over four times the percentage of continuing teachers (6.2% in 1994). While it is not surprising that entering teachers are not as qualified in terms of certification, the fact that about one in four open positions available for entering teachers has been filled with a partly certified individual implies a serious shortage of qualified people in teacher supply pools who are willing and able to accept open teaching positions. (See the row totals of Tables 18, 19, and 20.)

(3) Though no trend is evident during the six years from 1988 to 1994, it is clear that during 1991 and 1994 the percentage of transitional teachers who were only partly certified (13.6% in 1994) was three times higher than established teachers (4.5% in 1994). This fact suggests one major advantage for creating a stable teaching force and minimizing teacher turnover. (See Table 17.)

(4) Over the six-year period studied from 1988 to 1994, more than one in five (i.e., >25%) entering first-time teachers were partly certified, while one in four (i.e., about 20%) entering experienced teachers were partly certified. On this index, appointing entering experienced teachers is slightly less harmful to the qualifications of the teaching force than appointing first-time teachers. Unfortunately, the hiring of experienced teachers has declined sharply while hiring first-time teachers has increased (see Section 3 above). Among first-time teachers, those who earned degrees with majors in teacher preparation programs were much less likely to be partly certified (about 25% were partly certified in 1994) than were those

who earned degrees with majors in other fields (over 42% were partly certified in 1994). (See Table 17.)

(5) For all entering teachers combined, there was a gradual trend toward an increasing percentage of partly certified teachers from 21.9% in 1988 to 26.8% in 1994. (See the row totals of Tables 18, 19, and 20.)

b. By Cognate Area:

(1) There is moderate variability in the percentage of partly certified teachers across the eight cognate areas which averaged 7.5% in 1994. General elementary education has the lowest percentage of partly certified teachers (4.2%) while other general education had the highest (18.9%). Mathematics/science education was above average (11.4%) as was special education (10.8%). (See Table 20.)

(2) In other respects, each cognate area is similar to all teachers combined, i.e., more entering teachers than continuing teachers were partly certified, and more transitional than established teachers were partly certified. (See Tables 18, 19, and 20.)

9. Summary of Trends in Teacher Supply

a. Overall: The percentage of entering and continuing teachers in public schools was stable during a six year period from 1988 to 1994 (about 6% and 94%, respectively; see Section 1 above). However, among entering teachers, there was a sharp increase in the percentage of entering first-time teachers (particularly those who were delayed entrants) with a corresponding decline in reentering experienced teachers (see Sections 3, 5, and 6 above); and among continuing teachers, there was a gradual increase in the percentage of established teachers with a decline in transitional teachers (see Section 2 above). While the modest increase in the percentage of established continuing teachers improved the percentage of continuing teachers who were fully certified in their main teaching assignment, the increase in the percentage of first-time entering teachers worked in the opposite direction, resulting in no significant change in the percentage of partly certified teachers which remained at about 7% level during the period studied. Thus, the supply of entering teachers was sufficient to meet the demand for numbers of individuals to fill vacant teaching positions, but not in terms of nearly enough individuals who were fully certified in their main teaching assignments upon entry (see Section 8 above).

b. By Cognate Area: In general, the trends described above for all teachers were observed also in the various cognate areas. However, general elementary education

and special education differed most from other cognate areas. General elementary education was distinctive in that it had (a) high percentage growth in established teachers (along with special education), (b) high percentage growth in entering first-time teachers who were degree graduates from a field of teacher preparation as well as from other fields (along with special education), (c) a low percentage of irregular/part-time teachers (along with social studies education), and (d) the lowest percentage of teachers who were only partly certified in their main teaching assignment. (See Sections 2, 4, 7, and 8 above.) Special education was distinctive in that it had (a) the highest annual percentage demand for entering teachers, (b) high percentage growth in established teachers (along with general elementary education), (c) high percentage growth in entering first-time teachers who were degree graduates from a field of teacher preparation as well as from other fields (along with general elementary education), and (d) no percentage increase in first-time teachers who were recent graduates, but had high percentage growth in delayed entrants. (See Sections 1, 2, 4, and 6 above.) The "other general education" area was also distinctive in that it had a high percentage of irregular/part-time teachers (along with arts/physical education) and the highest percentage of partly certified teachers. (See Sections 7 and 8 above.)

Predictors of Teacher Supply

10. Teacher Characteristic Variables: One set of predictors of teacher supply was the characteristics of teachers, particularly demographic characteristics and qualification variables, as shown in Table 21. For the most part, the distribution of teacher characteristics was reasonably stable during the six year period studied from 1988 to 1994. However, a few trends during this time period were observed, as follows: (a) a slightly decreasing percentage of male teachers, (b) a slightly increasing percentage of teachers over age 50 and under age 30, and (c) an decreasing percentage of teachers with children under age six years. Table 21 contains information about the percentage distribution of selected characteristics of employed teachers for each of the three SASS years, as well as the nationally estimated numbers of teachers with such characteristics.
11. Teacher Employment Variables: A second set of predictors of teacher supply was teacher employment variables including such factors as salary, teaching assignment, and type of community in which a teacher's school was located, as shown in Table 22. The distribution of employment variables was reasonably stable during the six year period

studied from 1988 to 1994. Table 22 contains information about the percentage distribution of selected teacher employment variables for each of the three SASS years, as well as the national estimated numbers of teachers employed under each employment condition.

12. Teacher Characteristic Variables Predictive of Continuing Teachers: Odds ratios for the association of each teacher characteristic variable of Table 21 with continuing versus entering teachers in public schools were computed and are reported in Table 23. As of 1994, the results demonstrated that only the sex variable was not associated with continuing as an employed teacher versus entering the teaching force. For the other variables, continuing teachers (as contrasted with entering teachers) were associated with being White, increasing age, having ever been married, currently being married, having a least one dependent child, being fully certified, having earned a masters degree or higher, and having majored or minored in the field of one's main teaching assignment. Entering teachers (as contrasted with continuing teachers) were more likely to have a child under age six. Some of these associations were small, such as for the race/ethnicity variable, while for others such as the certification variable, the association was substantial. Thus, the data of Table 23 show the extent to which continuing and entering teachers differed in terms of teacher characteristic variables.
13. Teacher Employment Variables Predictive of Continuing Teachers: Odds ratios for the association of each teacher employment variable of Table 22 with continuing versus entering teachers in public schools were computed and are reported in Table 24. As of 1994, the results demonstrated that only the community type variable was not associated with continuing as an employed teacher versus entering the teaching force. For the other variables, continuing teachers (as contrasted with entering teachers) were associated with being employed in a regular full-time position, increasing salary level, having a teaching assignment in vocational/business education or in general elementary education instead of in special education, and being located in the Midwest or Northeast instead of the West. Entering teaches (as contrasted with continuing teachers) were more likely to be assigned to teach at the secondary instead of the elementary level. Some of these associations were weak, such as for the teaching level variable, while for others such as the salary variable, the association was very strong. Thus, the data of Table 23 show the extent to which continuing and entering teachers differed in terms of teacher employment variables.

14. Logistic Regression Models for Continuing Versus Entering Teachers: The odds ratios of Table 26 for 1993-94 provide a basis for explaining how continuing teachers differed from entering teachers under the statistically controlled conditions of the reduced logistic regression model. In comparison with entering teachers, continuing teachers were (a) over four times more likely (i.e., the ratio of the odds) to be in the oldest age category than in the youngest age category, (b) almost four times more likely to be fully certified in their main teaching assignment than partly certified, (c) about 1.7 times more likely to hold regular full-time teaching positions than irregular and/or part-time positions, and (d) over eight times more likely to be in the highest salary category than in the lowest salary category. The *c* index of 0.821 for the model containing these four predictor variables indicates high predictive power of the reduced regression model. In addition, this reduced model satisfied the Hosmer-Lemeshow goodness-of-fit (GOF) test ($p > .10$). Under the statistically controlled conditions of this model, it is also important to recognize which predictor variables did not appreciably add to its predictive power or improve its fit. For instance, teaching field, teaching level, degree level, sex, and race/ethnicity were not sufficiently associated with the dependent variable of continuing versus entering teachers to be helpful in explaining how these two categories of teachers differ. (See Table 26 for the reduced logistic regression model for predicting continuing versus entering teachers from which the above conclusions were based, and Table 25 for the corresponding full logistic regression model.)

15. Logistic Regression Models for Continuing Teachers by Region: The reduced logistic regression model of Table 26 for continuing versus entering teachers was replicated in each of the four regions of the Nation for 1994, the results of which are seen in Table 27. Though there are major similarities in the four regional models (e.g., the substantial odds ratios for age, salary, and certification factors, and a satisfactory GOF test) in all four regions, and there are also some notable differences (the low odds ratios for the employment status variable in South and West, and the lower predictive power of the model in the West than in the Northeast). Though we have not investigated the sources of these regional variations, those interested in region differences in teacher supply could perform further research on this topic.

16. Logistic Regression Models for Entering Experienced versus First-Time Teachers: The odds ratios of Table 28 for 1993-94 provide a basis for explaining how entering experienced teachers differed from first-time teachers under the statistically controlled conditions of the reduced logistic regression model. In comparison with first-time teachers, entering

experienced teachers were (a) over six times more likely (i.e., the ratio of the odds) to be in the oldest age category than in the youngest age category, (b) almost twice as likely to have married, have a child under age six years, and be fully certified in their main teaching assignment than partly certified, (c) over nineteen times more likely to be in the highest salary category than in the lowest salary category, and (d) over three times more certain that they made a wrong decision regarding going into the teaching profession than did first-time teachers. The latter findings is surprising because a disproportionate percentage of experienced teachers (in comparison with first-time teachers) had decided to reenter the ranks of employed teachers after a break in service while still feeling they had chosen the wrong profession for themselves. The *c* index of 0.807 for the model containing these six predictor variables indicates high predictive power of the reduced regression model. In addition, this reduced model satisfied the Hosmer-Lemeshow goodness-of-fit (GOF) test ($p > .20$). Under the statistically controlled conditions of this model, it is also important to recognize which predictor variables did not appreciably add to its predictive power or improve its fit. For instance, teaching field, teaching level, degree level, sex, and race/ethnicity were not sufficiently associated with the dependent variable of entering experienced versus first-time teachers to be helpful in explaining how these two categories of teachers differ. (See Table 28 for the reduced logistic regression model for predicting continuing versus entering teachers from which the above conclusions were based.)

17. Logistic Regression Models for Continuing Established versus Transitional Teachers: The odds ratios of Table 29 for 1993-94 provide a basis for explaining how continuing established teachers differed from transitional teachers under the statistically controlled conditions of the reduced logistic regression model. In comparison with transitional teachers, established teachers were (a) over three times more likely (i.e., the ratio of the odds) to be in the oldest age category than in the youngest age category, (b) about 1.7 times as likely to have earned a degree with a major or minor in their main teaching assignment, (c) almost three times more likely to be in the highest salary category than in the lowest salary category, and (d) about 1.8 times more likely to be vocational education teachers than special education teachers. The *c* index of 0.709 for the model containing these four predictor variables indicates moderate predictive power of the reduced regression model. In addition, this reduced model satisfied the Hosmer-Lemeshow goodness-of-fit (GOF) test ($p > .05$). Under the statistically controlled conditions of this model, it is also important to recognize which predictor variables did

not appreciably add to its predictive power or improve its fit. For instance, teaching level, degree level, certification, sex, and race/ethnicity were not sufficiently associated with the dependent variable of established versus transitional teachers to be helpful in explaining how these two categories of teachers differ. (See Table 29 for the reduced logistic regression model for predicting established versus transitional teachers from which the above conclusions were based.)

18. Summary of Predictors of Teacher Supply: Although almost all of the teacher characteristic and employment variables analyzed were individually associated with the supply variable of continuing versus entering teachers (see Tables 23 and 24), a parsimonious logistic regression model with high predictive power (c = 0.821) was constructed using only four predictor variables for this supply variable (see Table 26). This model demonstrated that continuing teachers, in comparison with entering teachers, tended to (a) be much older, (b) be much more likely to be fully certified in their main teaching assignment, (c) more likely to hold regular full-time teaching positions, and (d) enjoy much higher salaries (see Section 14 above). Similarly, a parsimonious logistic regression model with high predictive power (c = 0.807) was constructed for the supply variable of entering experienced teachers versus entering first-time teachers. This model included six predictor variables and demonstrated that entering experienced teachers, in comparison with entering first-time teachers, tended to (a) enjoy higher salaries, (b) be older, (c) feel that they would not go into the teaching profession if they could undo their original decision, (d) have a child under age six, (e) have been, or currently are, married, and (f) more likely to be fully certified in their main teaching assignment (see Section 16 above). Success was also had in constructing a parsimonious logistic regression model for the teacher supply variable of continuing established versus transitional teachers, though this model with four predictor variables was only of moderate predictive power (see Section 17 above). One noteworthy outcome of these analyses was that, under the statistically controlled conditions of logistic regression, the following predictor variables that did not contribute substantially to differences in the supply variables of continuing versus entering teachers, or experienced versus first-time entering teachers: (a) teaching field, (b) teaching level (i.e., elementary vs. secondary), (c) degree level, (d) sex, (e) race/ethnicity, and (f) community type (i.e., rural, suburban, central city).

Table 1. *Sources of Supply of Total Public School Teachers: National Estimates of the Percentages of Teachers by Four Supply Sources by Year*

		School Year*		
Supply Source: Total Teachers	Statistic[a]	1987-88	1990-91	1993-94
Continuing Teachers				
A. Established	Col %	73.4%	75.0%	76.1%
	SE %	0.3%	0.4%	0.3%
B. Transitional	Col %	20.1%	18.8%	17.7%
	SE %	0.3%	0.3%	0.3%
Subtotal: Continuing	Col %	93.6%	93.8%	93.7%
	SE %	0.2%	0.2%	0.2%
Entering Teachers				
A. First Time Teachers	Col%	2.6%	3.4 %	3.9%
	SE%	0.1%	0.2%	0.1%
B. Experienced Teachers	Col %	3.9%	2.8%	2.4%
	SE %	0.1%	0.1%	0.1%
Subtotal: Entering	Col %	6.5%	6.2%	6.3%
	SE %	0.2%	0.2%	0.2%
Total Teachers	Col %	100%	100%	100%
	Nat'l Estimate	2,319,134	2,550,991	2,552,121
	SE Estimate	13,089	20,977	20,828
	Sample (n)	40,522	46,599	46,994

Note. Data from the 1987-88, 1990-91 and 1993-94 Schools and Staffing Surveys, National Center for Education Statistics, USDE.

[a]Nationally weighted percentages (Col %) of the total numbers of full-time and part-time teachers combined at the elementary and secondary levels. SE % = standard error of the column percentages. Nat'l Estimate = nationally weighted estimates of the total number of teachers; SE Estimate = standard error of the national estimates.

*The supply source by school year (4 x 3) χ^2 was 176.76 ($p < .001$).

Table 2. *Sources of Supply of Total Public School Teachers for Eight Cognate Areas: National Estimates of the Percentages of Teachers by Four Supply Sources for 1987-88*

Supply Source: Total Teachers	Statistic[a]	Cognate Area: 1987-88* General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Other General	Special Education	Total
I. Continuing Teachers										
A. Established	Col %	73.3%	74.5%	72.4%	80.1%	75.2%	84.8%	65.6%	62.3%	73.4%
	SE %	0.5%	0.7%	0.7%	0.9%	0.6%	0.6%	1.3%	0.8%	0.3%
B. Transitional	Col %	19.9%	19.4%	20.8%	16.1%	18.5%	11.4%	27.1%	29.1%	20.1%
	SE %	0.4%	0.6%	0.7%	0.8%	0.5%	0.5%	1.2%	0.8%	0.3%
Subtotal: Continuing	Col %	93.2%	93.9%	93.2%	96.2%	93.7%	96.2%	92.7%	91.5%	93.6%
	SE %	0.2%	0.4%	0.3%	0.4%	0.4%	0.3%	0.8%	0.5%	0.2%
II. Entering Teachers										
A. First-Time	Col %	2.7%	2.9%	2.5%	1.9%	2.3%	1.7%	3.3%	2.8%	2.6%
	SE %	0.2%	0.3%	0.3%	0.3%	0.2%	0.2%	0.6%	0.3%	0.1%
B. Experienced	Col %	4.1%	3.1%	4.3%	1.9%	4.0%	2.2%	4.0%	5.8%	3.9%
	SE %	0.2%	0.3%	0.3%	0.3%	0.3%	0.2%	0.6%	0.4%	0.1%
Subtotal: Entering	Col %	6.8%	6.1%	6.8%	3.8%	6.3%	3.9%	7.3%	8.5%	6.5%
	SE %	0.2%	0.4%	0.3%	0.4%	0.4%	0.3%	0.8%	0.5%	0.2%
Total Teachers	Col %	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Nat'l Estimate	789,575	302,161	290,809	134,178	294,556	175,691	92,378	239,786	2,319,134
	SE Estimate	7,088	4,527	4,164	2,680	3,382	3,191	3,111	3,847	13,089
	Sample (n)	11,491	5,894	5,636	2,598	4,888	3,995	1,713	4,307	40,522

Note. Data from the 1987-88 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]Nationally weighted percentages (Col %) of the total numbers of full-time and part-time teachers combined at the elementary and secondary levels. SE % = standard error of the column percentages. Nat'l Estimate = nationally weighted estimates of the total numbers of teachers. SE Estimate = standard error of the national estimates.

*The supply source by cognate area (4 x 8) χ^2 was 538.96 ($p < .001$).

Table 3. *Sources of Supply of Total Public School Teachers for Eight Cognate Areas: National Estimates of the Percentages of Teachers by Four Supply Sources for 1990-91*

Supply Source: Total Teachers	Statistic[a]	Cognate Area: 1990-91* General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Other General	Special Education	Total
I. Continuing Teachers										
A. Established	Col %	76.1%	77.3%	73.4%	81.2%	75.0%	84.3%	65.1%	64.1%	75.0%
	SE %	0.6%	0.8%	0.8%	1.0%	0.9%	0.7%	2.2%	1.1%	0.4%
B. Transitional	Col %	17.5%	17.0%	20.0%	14.9%	19.4%	11.3%	28.8%	27.1%	18.8%
	SE %	0.4%	0.6%	0.8%	1.0%	0.8%	0.7%	2.1%	0.9%	0.3%
Subtotal: Continuing	Col %	93.6%	94.3%	93.4%	96.1%	94.3%	95.6%	93.9%	91.2%	93.8%
	SE %	0.3%	0.4%	0.5%	0.5%	0.5%	0.4%	0.8%	0.7%	0.2%
Ii. Entering Teachers										
A. First-Time	Col %	3.9%	3.2%	3.5%	2.4%	3.1%	2.3%	3.3%	3.6%	3.4%
	SE %	0.3%	0.3%	0.3%	0.4%	0.3%	0.3%	0.5%	0.4%	0.2%
B. Experienced	Col %	2.6%	2.6%	3.1%	1.5%	2.6%	2.1%	2.9%	5.2%	2.8%
	SE %	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.7%	0.6%	0.1%
Subtotal: Entering	Col %	6.4%	5.7%	6.6%	3.9%	5.7%	4.4%	6.1%	8.8%	6.2%
	SE %	0.3%	0.4%	0.5%	0.5%	0.5%	0.4%	0.8%	0.7%	0.2%
Total Teachers	Col %	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Nat'l Estimate	879,468	333,838	344,186	143,976	325,902	171,749	77,916	273,956	2,550,991
	SE Estimate	10,829	6,770	8,013	3,853	6,485	3,957	4,016	6,516	20,977
	Sample (n)	11,099	7,445	7,296	3,300	6,011	4,861	1,533	5,054	46,599

Note. Data from the 1990-91 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]Nationally weighted percentages (Col %) of the total numbers of full-time and part-time teachers combined at the elementary and secondary levels. SE % = standard error of the column percentages; Nat'l Estimate = nationally weighted estimates of the total numbers of teachers; SE Estimate = standard error of the national estimates.

*The supply source by cognate area (4 x 8) χ^2 was 330.57 ($p < .001$).

Table 4. *Sources of Supply of Total Public School Teachers for Eight Cognate Areas: National Estimates of the Percentages of Teachers by Four Supply Sources for 1993-94*

Supply Source: – Total Teachers	Statistic[a]	Cognate Area: 1993-94* General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Other General	Special Education	Total
I. Continuing Teachers										
A. Established	Col %	79.1%	75.6%	72.7%	77.8%	74.9%	83.0%	69.9%	69.7%	76.1%
	SE %	0.6%	0.8%	0.7%	0.8%	0.7%	0.7%	1.8%	1.0%	0.3%
B. Transitional	Col %	15.7%	17.7%	20.3%	15.5%	17.8%	11.6%	23.3%	23.0%	17.7%
	SE %	0.5%	0.6%	0.7%	0.7%	0.7%	0.6%	1.6%	0.9%	0.3%
Subtotal:	Col %	94.8%	93.3%	92.9%	93.2%	92.7%	94.6%	93.2%	92.8%	93.7%
Continuing	SE %	0.4%	0.5%	0.4%	0.7%	0.4%	0.5%	1.2%	0.5%	0.2%
II. Entering Teachers										
A. First-Time	Col %	3.5%	4.1%	3.9%	4.8%	4.3%	3.0%	4.8%	4.2%	3.9%
	SE %	0.2%	0.4%	0.3%	0.5%	0.3%	0.3%	1.1%	0.5%	0.1%
B. Experienced	Col %	1.7%	2.6%	3.2%	2.0%	3.0%	2.4%	2.1%	3.1%	2.4%
	SE %	0.2%	0.3%	0.3%	0.5%	0.3%	0.4%	0.5%	0.4%	0.1%
Subtotal:	Col %	5.2%	6.7%	7.1%	6.8%	7.3%	5.4%	6.8%	7.2%	6.3%
Entering	SE %	0.4%	0.5%	0.4%	0.7%	0.4%	0.5%	1.2%	0.5%	0.2%
Total Teachers	Col %	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Nat'l Estimate	873,258	349,921	341,713	145,330	320,067	154,029	97,701	270,101	2,552,121
	SE Estimate	13,426	6,528	6,426	3,413	5,584	3,491	3,710	5,228	20,828
	Sample (n)	10,023	8,168	7,507	3,513	6,163	4,504	1,828	5,288	46,994

Note. Data from the 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]Nationally weighted percentages (Col %) of the total numbers of full-time and part-time teachers combined at the elementary and secondary levels. SE % = standard error of the column percentages; Nat'l Estimate = nationally weighted estimates of the total numbers of teachers; SE Estimate = standard error of the national estimates.

*The supply source by cognate area (4 x 8) χ^2 was 190.21 ($p < .001$).

Table 5. *Sources of Supply of Entering Teachers in Public Schools: National Estimates of the Percentages of Teachers by Prior Teaching Experience and Degree Major for Three School Years*

		School Year*		
Supply Source: Entering Teachers	Statistic[a]	1987-88	1990-91	1993-94
First-Time Teachers				
A. Teacher Preparation Major	Col %	28.2%	37.3%	40.5%
	SE %	0.9%	1.1%	1.3%
B. Other Major/No Degree	Col %	11.5%	17.2%	21.4%
	SE %	0.7%	1.0%	1.0%
Subtotal: First-Time Teachers	Col %	39.7%	54.5%	61.9%
	SE %	1.1%	1.5%	1.3%
Experienced Teachers				
A. Reentering	Col %	53.1%	38.9%	32.1%
	SE %	1.1%	1.6%	1.3%
B. Private School Migrants	Col %	7.2%	6.6%	6.0%
	SE %	0.8%	0.9%	0.6%
Subtotal: Experienced Teachers	Col %	60.4%	45.5%	38.1%
	SE %	1.1%	1.5%	1.3%
Total Entering Teachers	Col %	100%	100%	100%
	Nat'l Esimate	149,538	158,988	160,639
	SE Estimate	3,508	4,927	3,994
	Sample (n)	2,658	3,126	3,185

Note. Data from the 1987-88, 1990-91 and 1993-94 Schools and Staffing Surveys, National Center for Education Statistics, USDE.

[a]Nationally weighted percentages (Col %) of the total numbers of entering full-time and part-time teachers combined at the elementary and secondary levels. SE % = standard error of the column percentages. Nat'l Estimate = nationally weighted estimates of the total number of teachers. SE Estimate = standard error of the national estimates.

*The supply source by school year (4 x 3) χ^2 was 139.27 ($p < .001$).

Table 6. *Sources of Supply of Entering Teachers in Public Schools for Seven Cognate Areas: National Estimates of the Percentages of Entering Teachers by Prior Teaching Experience and Degree Major for 1987-88*

Supply Source: Entering Teachers	Statistic[a]	Cognate Area: 1987-88* General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Special Education	Total
I. First-Time Teachers									
A. Teacher Prep Major	Col %	32.7%	19.1%	24.9%	20.5%[b]	30.3%	23.4%	28.5%	28.1%
	SE %	1.8%	2.2%	2.6%	3.8%	3.0%	3.3%	2.4%	1.0%
B. Other Major/No Degree	Col %	6.7%	29.4%	12.2%	28.5%	6.0%[b]	20.6%	4.1%[b]	11.3%
	SE %	1.0%	2.4%	1.7%	5.0%	2.1%	3.0%	1.2%	0.7%
Subtotal: First-Time Teachers	Col %	39.3%	48.5%	37.1%	48.9%	36.3%	44.0%	32.6%	39.4%
	SE %	1.9%	3.4%	3.2%	5.2%	2.9%	3.8%	2.7%	1.1%
II. Experienced Teachers	Col %	60.7%	51.5%	62.9%	51.1%	63.7%	56.0%	67.4%	60.6%
	SE %	1.9%	3.4%	3.2%	5.2%	2.9%	3.8%	2.7%	1.1%
Total Entering Teachers	Col %	100%	100%	100%	100%	100%	100%	100%	100%
	Nat'l	53,876	18,326	19,679	5,070	18,595	6,769	20,444	142,758
	SE Estimate	1,970	1,091	950	530	1,076	564	1,207	3,434
	Sample (n)	767	367	404	114	318	171	384	2,525

Note. Data from the 1987-88 Schools and Staffing Survey, National Center for Education Statistics, USDE. Other general education teachers excluded.

[a]Nationally weighted percentages (Col %) of the total numbers of entering full-time and part-time teachers combined at the elementary and secondary levels. SE % = standard error of the column percentages; Nat'l Estimate = nationally weighted estimates of the numbers of entering teachers. SE Estimate = standard error of the national estimates.

[b]Sample size (n) less than 30.

*The supply source by cognate area (3 x 7) $\chi^2$was 166.17 ($p < .001$).

Table 7. *Sources of Supply of Entering Teachers in Public Schools for Seven Cognate Areas: National Estimates of the Percentages of Entering Teachers by Prior Teaching Experience and Degree Major for 1990-91*

Entering Teachers	Statistic[a]	Cognate Area: 1990-91* General Elementary	Math/ Science	Language	Social Studies	Arts/PE	Business/ Vocational	Special Education	Total
I. First-Time Teachers									
A. Teacher Preparation Major	Col %	45.5%	27.5%	30.0%	25.2%	40.4%	33.2%	36.1%	37.5%
	SE %	2.6%	3.0%	2.7%	5.6%	3.7%	3.9%	3.1%	1.1%
B. Other Major/No Degree	Col %	14.5%	27.5%	23.4%	37.3%	14.6%	20.0%	5.0%[b]	17.1%
	SE %	1.9%	3.7%	2.5%	6.4%	3.2%	3.3%	1.3%	1.0%
Subtotal: First-Time Teachers	Col %	59.9%	55.0%	53.4%	62.4%	55.1%	53.3%	41.1%	54.6%
	SE %	2.6%	4.0%	3.1%	6.7%	3.9%	4.4%	3.7%	1.5%
II. Experienced Teachers	Col %	40.1%	45.0%	46.6%	37.6%	45.0%	46.7%	58.9%	45.4%
	SE %	2.6%	4.0%	3.1%	6.7%	3.9%	4.4%	3.7%	1.5%
Total Entering Teachers	Col %	100%	100%	100%	100%	100%	100%	100%	100%
	Nat'l Estimate	56,445	19,135	22,726	5,619	18,600	7,544	24,163	154,232
	SE Estimate	3,016	1,567	1,808	808	1,467	775	2,110	4,902
	Sample (n)	770	485	547	158	392	237	430	3,019

Note. Data from the 1990-91 Schools and Staffing Survey, National Center for Education Statistics, USDE. Other general education teachers excluded.

[a]Nationally weighted percentages of entering teachers (Col %) based on the total numbers of entering teachers at the elementary and secondary levels. SE % = standard error of the column percentages. Nat'l Estimate = nationally weighted estimates of the numbers of entering teachers. SE Estimate = standard error of the national estimates.

[b]Sample size (n) less than 30.

*The supply source by cognate area (3 x 7) χ^2 was 80.90 ($p < .001$).

Table 8. *Sources of Supply of Entering Teachers in Public Schools for Seven Cognate Areas: National Estimates of the Percentages of Entering Teachers by Prior Teaching Experience and Degree Major for 1993-94*

Supply Source: Entering Teachers	Statistic[a]	Cognate Area: 1993-94* General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Special Education	Total
I. First-Time Teachers									
A. Teacher Preparation Major	Col %	52.9%	29.3%	28.5%	38.6%	46.9%	34.5%	41.9%	41.3%
	SE %	3.4%	3.0%	2.6%	5.0%	3.4%	4.5%	4.4%	1.3%
B. Other Major/No Degree	Col %	14.6%	31.5%	26.8%	32.2%	12.1%	21.0%	15.4%	20.3%
	SE %	2.4%	2.7%	2.7%	4.4%	1.7%	3.8%	3.4%	1.0%
Subtotal: First-Time Teachers	Col %	67.5%	60.8%	55.4%	70.7%	59.0%	55.5%	57.3%	61.5%
	SE %	2.9%	3.3%	3.3%	5.6%	3.3%	5.3%	4.3%	1.3%
II. Experienced Teachers	Col %	32.5%	39.2%	44.6%	29.3%	41.0%	44.5%	42.8%	38.5%
	SE %	2.9%	3.3%	3.3%	5.6%	3.3%	5.3%	4.3%	1.3%
Total Entering Teachers	Col %	100%	100%	100%	100%	100%	100%	100%	100%
	Nat'l	45,236	23,453	24,109	9,869	23,393	8,377	19,566	154,003
	SE Estimate	3,256	1,856	1,622	1,014	1,261	814	1,486	3,867
	Sample (n)	556	573	551	243	452	260	408	3,043

Note. Data from the 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE. Other general education teachers excluded.

[a]Nationally weighted percentages (Col %) of the total numbers of entering full-time and part-time teachers combined at the elementary and secondary levels. SE % = standard error of the column percentages. Nat'l Estimate = nationally weighted estimates of the numbers of entering teachers. SE Estimate = standard error of the national estimates.

*The supply source by cognate area (3 x 7) χ^2 was 78.58 ($p < .001$).

Table 9. *Sources of Supply of Entering Teachers in Public Schools: National Estimates of the Percentages of Teachers by Prior Teaching Experience and Delay of Entry for Three School Years*

		School Year*		
Supply Source: Entering Teachers	Statistic[a]	1987-88	1990-91	1993-94
First-Time Teachers				
A. Recent Graduates:				
1. Teacher Preparation Major	Col %	16.0%	20.3%	19.8%
	SE %	0.7%	1.0%	0.8%
2. Other Major	Col %	2.7%	4.4%	5.8%
	SE %	0.3%	0.4%	0.6%
B. Delayed Entrants:				
1. Teacher Preparation Major	Col %	12.1%	17.0%	20.7%
	SE %	0.7%	1.1%	1.1%
2. Other Major/No Degree	Col %	8.8%	12.9%	15.6%
	SE %	0.6%	0.9%	1.1%
Subtotal: First-Time Teachers	Col %	39.7%	54.5%	61.9%
	SE %	1.1%	1.5%	1.3%
Experienced Teachers				
A. Reentering	Col %	53.1%	38.9%	32.1%
	SE %	1.1%	1.6%	1.3%
B. Private School Migrants	Col %	7.2%	6.6%	6.0%
	SE %	0.8%	0.9%	0.6%
Subtotal: Experienced Teachers	Col %	60.4%	45.5%	38.1%
	SE %	1.1%	1.5%	1.3%
Total Entering Teachers	Col %	100%	100%	100%
	Nat'l Estimate	149,538	158,988	160,639
	SE Estimate	3,508	4,927	3,994
	Sample (n)	2,658	3,126	3,185

Note. Data from the 1987-88, 1990-91 and 1993-94 Schools and Staffing Surveys, National Center for Education Statistics, USDE.

[a]Nationally weighted percentages (Col %) of the total numbers of entering full-time and part-time teachers combined at the elementary and secondary levels. SE % = standard error of the column percentages. Nat'l Estimate = nationally weighted estimates of the total number of teachers. SE Estimate = standard error of the national estimates.

*The supply source by school year (6 x 3) χ^2 was 160.44 ($p < .001$)

Table 10. *Sources of Supply of Entering Teachers in Public Schools for Seven Cognate Areas: National Estimates of the Percentages of Entering Teachers by Prior Teaching Experience and Delay of Entry for 1987-88*

Supply Source: Entering Teachers	Statistic[a]	Cognate Area: 1987-88* General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Special Education	Total
I. First-Time Teachers									
A. Recent Graduates	Col %	19.7%	18.8%	17.9%	15.9%[b]	18.4%	10.1%[b]	22.9%	19.1%
	SE %	1.7%	2.6%	2.0%	3.5%	2.3%	2.5%	2.2%	0.8%
B. Delayed Entrants	Col %	19.6%	29.7%	19.2%	33.0%	17.9%	33.9%	9.6%	20.3%
	SE %	1.6%	3.1%	2.7%	5.4%	2.9%	3.6%	2.0%	0.9%
Subtotal: First-Time Teachers	Col %	39.3%	48.5%	37.1%	48.9%	36.3%	44.0%	32.6%	39.4%
	SE %	1.9%	3.4%	3.2%	5.2%	2.9%	3.8%	2.7%	1.1%
II. Experienced Teachers	Col %	60.7%	51.5%	62.9%	51.1%	63.7%	56.0%	67.4%	60.6%
	SE %	1.9%	3.4%	3.2%	5.2%	2.9%	3.8%	2.7%	1.1%
Total Entering Teachers	Col %	100%	100%	100%	100%	100%	100%	100%	100%
	Nat'l Estimate	53,876	18,326	19,679	5,070	18,595	6,769	20,444	142,758
	SE Estimate	1,970	1,091	950	530	1,076	564	1,207	3,434
	Sample (n)	767	367	404	114	318	171	384	2,525

Note. Data from the 1987-88 Schools and Staffing Survey, National Center for Education Statistics, USDE. Other general education teachers excluded.

[a]Nationally weighted percentages (Col %) of the total numbers of entering full-time and part-time teachers combined at the elementary and secondary levels. SE % = standard error of the column percentages. Nat'l Estimate = nationally weighted estimates of the numbers of entering teachers. SE Estimate = standard error of the national estimates.

[b]Sample size (n) less than 30.

*The supply source by cognate area (3 x 7) χ^2 was 56.76 ($p < .001$).

Table 11. *Sources of Supply of Entering Teachers in Public Schools for Seven Cognate Areas: National Estimates of the Percentages of Entering Teachers by Prior Teaching Experience and Delay of Entry for 1990-91*

Supply Source: Entering Teachers	Statistic[a]	Cognate Area: 1990-91* General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Special Education	Total
I. First-Time Teachers									
A. Recent Graduates	Col %	28.0%	25.2%	22.2%	24.8%	23.3%	16.2%	23.1%	24.8%
	SE %	2.1%	2.6%	2.4%	6.4%	2.8%	3.1%	3.0%	1.1%
B. Delayed Entrants	Col %	31.9%	29.8%	31.2%	37.6%	31.8%	37.1%	17.9%	29.8%
	SE %	2.6%	3.8%	2.7%	6.2%	3.4%	4.6%	3.4%	1.6%
Subtotal: First-Time Teachers	Col %	59.9%	55.0%	53.4%	62.4%	55.1%	53.3%	41.1%	54.6%
	SE %	2.6%	4.0%	3.1%	6.7%	3.9%	4.4%	3.7%	1.5%
II. Experienced Teachers	Col %	40.1%	45.0%	46.6%	37.6%	45.0%	46.7%	58.9%	45.4%
	SE %	2.6%	4.0%	3.1%	6.7%	3.9%	4.4%	3.7%	1.5%
Total Entering Teachers	Col %	100%	100%	100%	100%	100%	100%	100%	100%
	Nat'l Estimate	56,445	19,135	22,726	5,619	18,600	7,544	24,163	154,232
	SE Estimate	3,016	1,567	1,808	808	1,467	775	2,110	4,902
	Sample (n)	770	485	547	158	392	237	430	3,019

Note. Data from the 1990-91 Schools and Staffing Survey, National Center for Education Statistics, USDE. Other general education teachers excluded.

[a]Nationally weighted percentages of entering teachers (Col %) based on the total numbers of entering teachers at the elementary and secondary levels. SE % = standard error of the column percentages. Nat'l Estimate = nationally weighted estimates of the numbers of entering teachers. SE Estimate = standard error of the national estimates.

*The supply source by cognate area (3 x 7) χ^2 was 35.87 ($p < .001$).

Table 12. *Sources of Supply of Entering Teachers in Public Schools for Seven Cognate Areas: National Estimates of the Percentages of Entering Teachers by Prior Teaching Experience and Delay of Entry for 1993-94*

		Cognate Area: 1993-94*							
Supply Source: Entering Teachers	Statistic[a]	General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Special Education	Total
I. First-Time Teachers									
A. Recent Graduates	Col %	27.7%	25.7%	23.9%	31.6%	28.3%	18.4%	22.3%	26.0%
	SE %	2.5%	3.2%	1.9%	4.2%	2.5%	4.3%	3.1%	1.0%
B. Delayed Entrants	Col %	39.8%	35.1%	31.5%	39.1%	30.7%	37.1%	35.0%	35.6%
	SE %	2.8%	2.6%	3.3%	4.3%	3.1%	4.4%	4.4%	1.4%
Subtotal: First-Time Teachers	Col %	67.5%	60.8%	55.4%	70.7%	59.0%	55.5%	57.3%	61.5%
	SE %	2.9%	3.3%	3.3%	5.6%	[illegible]%	5.3%	4.3%	1.3%
II. Experienced Teachers	Col %	32.5%	39.2%	44.6%	29.3%	[illegible]%	44.5%	42.8%	38.5%
	SE %	2.9%	3.3%	3.3%	5.6%	[illegible]%	5.3%	4.3%	1.3%
Total Entering Teachers	Col %	100%	100%	100%	100%	100%	100%	100%	100%
	Nat'l Estimate	45,236	23,453	24,109	9,869	23,393	8,377	19,566	154,003
	SE Estimate	3,256	1,856	1,622	1,014	1,261	814	1,486	3,867
	Sample	556	573	551	243	452	260	408	3,043

Note. Data from the 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE. Other general education teachers excluded.

[a]Nationally weighted percentages (Col %) of the total numbers of entering full-time and part-time teachers combined at the elementary and secondary levels. SE % = standard error of the column percentages. Nat'l Estimate = nationally weighted estimates of the numbers of entering teachers. SE Estimate = standard error of the national estimates.

*The supply source by cognate area (3 x 7) χ^2 was 20.26 (*ns*).

Table 13. *Irregular/Part-Time Teachers in Public Schools: National Estimates of the Percentages of Total Teachers Who Held Irregular/Part-Time Positions by Eight Supply Sources by Year*

Supply Source: Irregular/ Part-Time Teachers[a]	Statistics for Irregular/ Part-Time Teachers[b]	School Year[a] 1987-88***	1990-91***	1993-94***
Continuing Teachers				
A. Established***	% Irregular/Part-Time	7.8%	6.6%	7.5%
	SE %	0.2%	0.2%	0.2%
B. Transitional	% Irregular/Part-Time	13.8%	14.0%	12.6%
	SE %	0.5%	0.6%	0.5%
Entering Teachers				
A. First-Time Teachers				
1. Teacher Preparation Major	% Irregular/Part-Time	16.0%	13.5%	18.1%
	SE %	1.5%	1.5%	1.6%
2. Other Major	% Irregular/Part-Time	14.0%	20.0%	15.4%
	SE %	2.5%	2.7%	1.9%
Subtotal: First-Time Teachers	% Irregular/Part-Time	15.5%	15.6%	17.2%
	SE %	1.2%	1.3%	1.3%
B. Experienced Teachers				
1. Reentering	% Irregular/Part-Time	21.2%	21.6%	20.1%
	SE %	1.4%	1.9%	1.8%
2. Private School Migrants	% Irregular/Part-Time	18.2%	20.2%	15.6%
	SE %	3.5%	4.9%	3.3%
Subtotal: Experienced Teachers	% Irregular/Part-Time	20.8%	21.4%	19.4%
	SE %	1.3%	1.8%	1.7%
Total Teachers**	% Irregular/Part-Time	9.7%	8.7%	9.1%
	SE %	0.2%	0.2%	0.2%
	National Estimate	224,959	221,460	230,986
	Sample (n)	4,026	4,089	4,507

Note. Data from the 1987-88, 1990-91 and 1993-94 Schools and Staffing Surveys, National Center for Education Statistics, USDE. Irregular/part-time teachers include all itinerant teachers and long term substitute teachers, and all part-time teachers.

[a]The statistical significance of differences between the tabled percentages of irregular and/or part-time teachers (% Irregular/ Part-Time) was computed by chi square tests. For example, consider the column of percentages for 1987-88 by six sources of supply. The supply source by Regular/Full-Time vs Irregular/Part-Time (6 x 2) χ^2 was 229.02 ($p < .001$). Similarly tested was the statistical significance of differences in the row percentages for each of six supply sources by school year. The level of statistical significance computed is indicated by asterisks: *$p<.05$, **$p<.01$, ***$p<.001$.

[b]Nationally weighted percentages of irregular/part-time teachers based on the cell total numbers of teachers at the elementary and secondary levels. SE % = standard error of the irregular/part-time percentages.

Table 14. *Sources of Supply of Irregular/Part-Time Teachers in Public Schools for Eight Cognate Areas: National Estimates of the Percentages of Teachers Who Held Irregular/Part-Time Positions by Four Supply Sources for 1987-88*

Supply Source: Irregular/ Part-Time Teachers	Statistic[a]	Cognate Area: 1987-88* General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Other General	Special Education	Total
I. Continuing Teachers										
A. Established	% Irreg/PT	1.7%	4.2%	7.8%	3.0%	23.6%	5.9%	18.4%	14.4%	7.8%
	SE %	0.1%	0.4%	0.4%	0.4%	0.8%	0.6%	1.5%	0.8%	0.2%
B. Transitional	% Irreg/PT	4.3%	8.1%	15.0%	5.7%[b]	37.6%	16.8%	26.9%	17.3%	13.8%
	SE %	0.5%	1.0%	1.3%	1.1%	2.0%	1.8%	2.9%	1.1%	0.5%
Subtotal: Continuing Teachers	% Irreg/PT	2.3%	5.0%	9.4%	3.5%	26.3%	7.2%	20.9%	15.3%	9.1%
	SE %	0.2%	0.3%	0.4%	0.4%	0.7%	0.6%	1.5%	0.6%	0.2%
II. Entering Teachers										
A. First-Time	% Irreg/PT	8.0%[b]	9.8%[b]	17.3%[b]	11.4%[b]	35.4%	17.1%[b]	31.2%[b]	18.2%[b]	15.5%
	SE %	1.8%	1.9%	4.3%	3.7%	5.6%	3.5%	8.8%	3.7%	1.2%
B. Experienced	% Irreg/PT	12.3%	15.4%[b]	22.6%	12.8%[b]	45.0%	24.0%[b]	31.5%[b]	20.0%	20.8%
	SE %	1.8%	3.1%	3.2%	4.1%	4.6%	5.4%	5.4%	2.9%	1.3%
Subtotal: Entering Teachers	% Irreg/PT	10.6%	12.7%	20.6%	12.1%[b]	41.5%	20.9%	31.4%	19.5%	18.7%
	SE %	1.1%	1.7%	2.4%	2.7%	3.5%	3.1%	4.5%	2.3%	0.7%
III. Total Teachers	% Irreg/PT	2.8%	5.4%	10.1%	3.8%	27.3%	7.7%	21.7%	15.7%	9.7%
	SE %	0.2%	0.4%	0.4%	0.3%	0.7%	0.6%	1.3%	0.6%	0.2%

Note. Data from the 1987-88 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]Nationally weighted percentages of the numbers of irregular/part-time teachers (% Irreg/PT) based on the cell total numbers of teachers at the elementary and secondary levels. SE % = standard error of the irregular/part-time percentages.

[b]Sample size (n) less than 30.

Table 15. *Sources of Supply of Irregular/Part-Time Teachers in Public Schools for Eight Cognate Areas: National Estimates of the Percentages of Teachers Who Held Irregular/Part-Time Positions by Four Supply Sources for 1990-91*

Supply Source: Irregular/ Part-Time Teachers	Statistic[a]	Cognate Area: 1990-91* General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Other General	Special Education	Total
I. Continuing Teachers										
A. Established	% Irreg/PT	1.5%	2.6%	6.7%	2.7%	22.0%	6.0%	11.5%	11.6%	6.6%
	SE %	0.2%	0.3%	0.5%	0.5%	1.0%	0.7%	1.4%	0.9%	0.2%
B. Transitional	% Irreg/PT	4.6%	5.3%	15.2%	4.6%[b]	40.0%	10.1%	25.5%	17.1%	14.0%
	SE %	0.8%	1.1%	1.7%	1.6%	2.3%	1.6%	3.9%	1.5%	0.6%
Subtotal: Continuing Teachers	% Irreg/PT	2.1%	3.1%	8.6%	3.0%	25.7%	6.5%	15.8%	13.3%	8.1%
	SE %	0.2%	0.3%	0.6%	0.5%	0.9%	0.6%	1.4%	0.8%	0.2%
II. Entering Teachers										
A. First-Time	% Irreg/PT	7.8%[b]	9.6%	18.1%	16.3%[b]	35.7%	26.1%[b]	31.7%[b]	15.8%[b]	15.6%
	SE %	2.4%	1.8%	3.1%	6.5%	5.6%	5.1%	7.7%	3.6%	1.3%
B. Experienced	% Irreg/PT	12.7%	13.6%[b]	24.4%	16.0%[b]	46.2%	31.8%[b]	25.6%[b]	20.5%	21.4%
	SE %	2.9%	4.1%	3.9%	9.9%	5.8%	7.2%	10.1%	5.1%	1.8%
Subtotal: Entering Teachers	% Irreg/PT	9.8%	11.4%	21.0%	16.2%[b]	40.4%	28.8%	28.8%[b]	18.6%	18.2%
	SE %	2.0%	2.0%	2.3%	5.3%	3.0%	4.4%	5.8%	3.7%	1.1%
Total Teachers	% Irreg/PT	2.6%	3.5%	9.4%	3.5%	26.6%	7.5%	16.6%	13.7%	8.7%
	SE %	0.2%	0.3%	0.6%	0.6%	0.9%	0.6%	1.4%	0.8%	0.2%

Note. Data from the 1990-91 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]Nationally weighted percentages of the numbers of irregular/part-time teachers (% Irreg/PT) based on the cell total numbers of teachers at the elementary and secondary levels. SE % = standard error of the irregular/part-time percentages.

[b]Sample size (n) less than 30.

Table 16. *Sources of Supply of Irregular/Part-Time Teachers in Public Schools for Eight Cognate Areas: National Estimates of the Percentages of Teachers Who Held Irregular/Part-Time Positions by Four Supply Sources for 1993-94*

Supply Source: Irregular/ Part-Time Teachers	Statistic[a]	Cognate Area: 1993-94* General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Other General	Special Education	Total
I. Continuing Teachers										
A. Established	% Irreg/PT	2.0%	3.4%	8.3%	2.9%	21.3%	6.2%	26.2%	11.5%	7.5%
	SE %	0.2%	0.3%	0.7%	0.3%	1.0%	0.5%	1.8%	0.9%	0.2%
B. Transitional	% Irreg/PT	3.2%	5.8%	14.9%	4.7%	33.2%	14.5%	29.0%	15.1%	12.6%
	SE %	0.5%	0.8%	1.3%	1.0%	2.0%	1.9%	3.5%	1.4%	0.5%
Subtotal: Continuing Teachers	% Irreg/PT	2.2%	3.9%	9.8%	3.2%	23.6%	7.2%	26.9%	12.4%	8.5%
	SE %	0.2%	0.3%	0.6%	0.2%	1.0%	0.5%	1.6%	0.7%	0.2%
II. Entering Teachers										
A. First-Time	% Irreg/PT	12.8%	15.0%	17.0%	10.6%[b]	30.3%	13.4%	24.3%[b]	18.5%	17.2%
	SE %	2.7%	3.2%	2.4%	2.8%	4.6%	3.3%	6.9%	4.5%	1.3%
B. Experienced	% Irreg/PT	6.7%[b]	16.6%	19.1%	17.4%[b]	41.8%	23.8%[b]	22.7%[b]	17.2%	19.4%
	SE %	3.0%	3.2%	4.2%	5.7%	6.0%	5.5%	7.3%	3.5%	1.7%
Subtotal: Entering Teachers	% Irreg/PT	10.8%	15.6%	18.0%	12.6%	35.0%	18.0%	23.8%	18.0%	18.0%
	SE %	1.9%	2.5%	2.3%	2.9%	3.9%	3.1%	5.5%	2.7%	1.0%
Total Teachers	% Irreg/PT	2.6%	4.6%	10.3%	3.8%	24.4%	7.8%	26.7%	12.8%	9.1%
	SE %	0.2%	0.3%	0.6%	0.3%	1.0%	0.6%	1.5%	0.7%	0.2%

Note. Data from the 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]Nationally weighted percentages of the numbers of irregular/part-time teachers (% Irreg/PT) based on the cell total numbers of teachers at the elementary and secondary levels. SE % = standard error of the irregular/part-time percentages.

[b]Sample size (n) less than 30.

Table 17. *Partly-Certified Teachers in Public Schools: National Estimates of the Percentages of Total Teachers Who Were Partly-Certified by Eight Supply Sources by Year*

Supply Source: Partly-Certified Teachers[a]	Statistics for Partly-Certified Teachers[b]	School Year[a] 1987-88***	1990-91***	1993-94***
Continuing Teachers				
A. Established***	% Partly-Certified	5.4%	3.4%	4.5%
	SE %	0.2%	0.2%	0.2%
B. Transitional**	% Partly-Certified	12.7%	10.9%	13.6%
	SE %	0.5%	0.6%	0.7%
Entering Teachers				
A. First-Time Teachers				
1. Teacher Preparation Major	% Partly-Certified	20.1%	20.3%	24.7%
	SE %	1.6%	1.8%	1.6%
2. Other Major	% Partly-Certified	39.8%	41.2%	42.4%
	SE %	3.7%	4.0%	3.5%
Subtotal: First-Time Teachers	% Partly-Certified	25.8%	26.9%	30.8%
	SE %	1.7%	1.7%	1.6%
B. Experienced Teachers				
1. Reentering	% Partly-Certified	19.1%	15.9%	20.3%
	SE %	1.3%	1.6%	1.8%
2. Private School Migrants	% Partly-Certified	20.7%	20.2%	19.9%
	SE %	3.8%	5.3%	3.6%
Subtotal: Experienced Teachers	% Partly-Certified	19.3%	16.5%	20.2%
	SE %	1.2%	1.5%	1.6%
Total Teachers***	% Partly-Certified	7.9%	6.0%	7.5%
	SE %	0.2%	0.2%	0.2%
	National Estimate	183,636	152,598	190,612
	Sample (n)	3,130	2,550	3,223

Note. Data from the 1987-88, 1990-91 and 1993-94 Schools and Staffing Surveys, National Center for Education Statistics, USDE.

[a]The statistical significance of differences between the tabled percentages of partly-certified teachers (% Partly-Certified) was computed by chi square tests. For example, consider the column of percentages for 1987-88 by six sources of supply. The supply source by Fully-Certified vs. Partly Certified (6 x 2) χ^2 was 337.77 ($p < .001$). Similarly tested was the statistical significance of differences in the row percentages for each of six supply sources by school year. The level of statistical significance computed is indicated by asterisks: *$p<.05$, **$p<.01$, ***$p<.001$.

[b]Nationally weighted percentages of partly-certified teachers (% Partly-Certified) based on the cell total numbers of teachers at the elementary and secondary levels. SE % = standard error of the partly-certified percentages.

Table 18. *Partly-Certified Teachers in Public Schools for Eight Cognate Areas: National Estimates of the Percentages of Teachers Who Were Partly-Certified by Four Supply Sources for 1987-88*

Supply Source: Partly-Certified Teachers	Statistic[a]	Cognate Area: 1987-88								
		General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Other General	Special Education	Total
I. Continuing Teachers										
A. Established	% Part-Cert	5.9%	6.5%	5.0%	3.5%	3.6%	3.1%	10.5%	6.4%	5.4%
	SE %	0.4%	0.4%	0.4%	0.5%	0.3%	0.3%	1.2%	0.6%	0.2%
B. Transitional	% Part-Cert	10.9%	17.8%	10.6%	9.4%	9.8%	14.6%	18.3%	15.1%	12.7%
	SE %	0.9%	1.4%	1.0%	1.5%	1.4%	1.6%	2.4%	1.3%	0.5%
Subtotal: Continuing Teachers	% Part-Cert	7.0%	8.8%	6.3%	4.4%	4.8%	4.4%	12.8%	9.2%	7.0%
	SE %	0.4%	0.4%	0.4%	0.5%	0.4%	0.4%	1.3%	0.5%	0.2%
II. Entering Teachers										
A. First-Time	% Part-Cert	22.9%	29.1%	30.4%	18.9%[b]	12.4%[b]	39.1%[b]	48.4%[b]	25.5%	25.8%
	SE %	3.0%	5.0%	5.4%	7.0%	3.2%	6.3%	9.6%	4.0%	1.7%
B. Experienced	% Part-Cert	14.2%	25.2%	19.8%	17.5%[b]	13.6%[b]	23.0%[b]	36.6%[b]	26.7%	19.3%
	SE %	2.0%	3.9%	3.1%	5.1%	3.3%	4.0%	7.7%	2.8%	1.2%
Subtotal: Entering Teachers	% Part-Cert	17.6%	27.1%	23.7%	18.2%[b]	13.1%	30.1%	41.9%	26.3%	21.9%
	SE %	1.8%	2.6%	2.8%	3.9%	2.6%	3.4%	6.7%	2.2%	1.0%
Total Teachers	% Part-Cert	7.7%	9.9%	7.5%	5.0%	5.3%	5.4%	14.9%	10.7%	7.9%
	SE %	0.4%	0.4%	0.4%	0.5%	0.4%	0.4%	1.2%	0.5%	0.2%

Note. Data from the 1987-88 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]Nationally weighted percentages of partly-certified teachers (% Part-Cert) based on the cell total numbers of teachers at the elementary and secondary levels. SE % = standard error of the partly-certified percentages.

[b]Sample size (n) less than 30.

Table 19. *Partly-Certified Teachers in Public Schools for Eight Cognate Areas: National Estimates of the Percentages of Teachers Who Were Partly-Certified by Four Supply Sources for 1990-91*

Supply Source: Partly-Certified Teachers	Statistic[a]	Cognate Area: 1990-91 General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Other General	Special Education	Total
I. Continuing Teachers										
A. Established	% Part-Cert	2.0%	4.9%	3.9%	3.1%	3.5%	2.7%	11.3%	4.5%	3.4%
	SE %	0.2%	0.5%	0.4%	0.5%	0.6%	0.4%	1.5%	0.6%	0.2%
B. Transitional	% Part-Cert	8.3%	11.0%	13.9%	11.2%	8.1%	9.2%	12.8%	15.3%	10.9%
	SE %	1.1%	1.4%	1.6%	2.7%	1.3%	1.6%	2.2%	1.5%	0.6%
Subtotal: Continuing Teachers	% Part-Cert	3.2%	6.0%	6.0%	4.4%	4.4%	3.5%	11.8%	7.7%	4.9%
	SE %	0.3%	0.4%	0.5%	0.6%	0.6%	0.4%	1.2%	0.6%	0.2%
II. Entering Teachers										
A. First-Time	% Part-Cert	17.7%	27.7%	31.5%	31.6%[b]	27.5%	30.5%	57.2%[b]	40.3%	26.9%
	SE %	2.8%	4.3%	3.9%	9.5%	5.4%	5.3%	8.8%	5.3%	1.7%
B. Experienced	% Part-Cert	13.4%	12.0%[b]	17.6%	13.1%[b]	9.4%[b]	13.9%[b]	41.3%[b]	25.0%	16.5%
	SE %	3.1%	4.3%	3.9%	6.9%	3.2%	4.3%	13.1%	4.8%	1.5%
Subtotal: Entering Teachers	% Part-Cert	15.9%	20.6%	25.0%	24.7%[b]	19.4%	22.8%	49.8%	31.3%	22.2%
	SE %	2.0%	3.2%	3.0%	6.3%	3.5%	3.4%	7.7%	3.7%	1.0%
Total Teachers	% Part-Cert	4.0%	6.8%	7.3%	5.2%	5.3%	4.3%	14.1%	9.8%	6.0%
	SE %	0.3%	0.4%	0.5%	0.7%	0.5%	0.4%	1.4%	0.7%	0.2%

Note. Data from the 1990-91 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]Nationally weighted percentages of partly-certified teachers (% Part-Cert) based on the cell total numbers of teachers at the elementary and secondary levels. SE % = standard error of the partly-certified percentages.

[b]Sample size (n) less than 30.

Table 20. *Partly-Certified Teachers in Public Schools for Eight Cognate Areas: National Estimates of the Percentages of Teachers Who Were Partly-Certified by Four Supply Sources for 1993-94*

Supply Source: Partly-Certified Teachers	Statistic[a]	Cognate Area: 1993-94 General Elementary	Math/ Science	Language	Social Studies	Arts/ Phys Ed	Business/ Vocational	Other General	Special Education	Total
I. Continuing Teachers										
A. Established	% Part-Cert	2.4%	7.5%	5.0%	5.2%	3.3%	3.5%	13.1%	5.5%	4.5%
	SE %	0.4%	0.5%	0.5%	0.6%	0.5%	0.4%	1.4%	0.6%	0.2%
B. Transitional	% Part-Cert	8.1%	19.2%	16.8%	9.1%	8.0%	11.5%	25.3%	19.5%	13.6%
	SE %	1.3%	1.8%	1.8%	1.8%	1.4%	1.8%	2.9%	1.6%	0.7%
Subtotal: Continuing Teachers	% Part-Cert	3.3%	9.7%	7.6%	5.9%	4.2%	4.5%	16.1%	9.0%	6.2%
	SE %	0.4%	0.5%	0.6%	0.6%	0.4%	0.4%	1.4%	0.6%	0.2%
II. Entering Teachers										
A. First-Time	% Part-Cert	21.2%	36.9%	28.3%	26.8%	27.0%	37.0%	73.4%	39.4%	30.8%
	SE %	3.7%	3.2%	3.7%	5.9%	3.5%	4.9%	6.0%	5.7%	1.6%
B. Experienced	% Part-Cert	18.1%[b]	31.2%	15.6%	24.9%[b]	11.9%[b]	17.1%[b]	16.3%[b]	28.0%	20.2%
	SE %	4.6%	4.6%	4.0%	12.6%	3.7%	5.1%	6.9%	5.0%	1.6%
Subtotal: Entering Teachers	% Part-Cert	20.2%	34.6%	22.6%	26.3%	20.8%	28.1%	56.2%	34.5%	26.8%
	SE %	3.2%	2.7%	2.7%	5.3%	2.5%	3.8%	6.6%	4.2%	1.3%
Total Teachers	% Part-Cert	4.2%	11.4%	8.7%	7.2%	5.4%	5.8%	18.9%	10.8%	7.5%
	SE %	0.4%	0.5%	0.6%	0.7%	0.5%	0.4%	1.6%	0.7%	0.2%

Note. Data from the 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]Nationally weighted percentages of partly-certified teachers (% Part-Cert) based on the cell total numbers of teachers at the elementary and secondary levels. SE % = standard error of the partly-certified percentages.

[b]Sample size (n) less than 30.

Table 21. *National Trends in Teacher Characteristic Variables: Percentage Distributions and National Estimates of the Numbers of Teachers in Public Schools for Three School Years (1987-88, 1990-91, 1993-94)*

Teacher Characteristic Variables[a]		Column Percentages[b]			Weighted National Estimates (1000s)		
Name	Levels	1987-88	1990-91	1993-94	1987-88	1990-91	1993-94
Sex***	Female	70.5%	71.8%	72.8%	1,634	1,832	1,858
	Male	29.5%	28.2%	27.2%	685	719	694
Race / Ethnic.	White, Non-Hisp.	86.9%	86.5%	86.6%	2,015	2,207	2,210
	Non-White	13.1%	13.5%	13.4%	304	344	342
Age (Deciles)***	55 +	10.4%	11.3%	11.0%	241	288	281
	51 - 54	9.9%	8.8%	10.7%	230	225	274
	48 - 50	11.0%	12.9%	10.8%	256	329	276
	46 - 47	10.4%	8.1%	10.1%	241	207	258
	44 - 45	9.4%	9.4%	8.9%	217	239	228
	42 - 43	9.0%	12.8%	8.4%	210	326	214
	38 - 41	8.8%	7.2%	12.3%	204	183	313
	34 - 37	12.7%	11.0%	9.1%	294	280	232
	30 - 33	9.1%	8.5%	7.8%	210	218	198
	20 - 29	9.3%	10.0%	10.9%	215	256	279
Ever Married	Ever Married	85.5%	85.4%	85.5%	1,982	2,178	2,181
	Never Married	14.5%	14.6%	14.5%	337	373	371
Marital Status*	Married	73.4%	72.4%	73.2%	1,703	1,847	1,869
	Not Married	26.6%	27.6%	26.8%	616	704	683
Child Under Six Years***	Child < 6 yrs.	19.4%	16.8%	15.6%	449	429	397
	No Child < 6 yrs.	80.6%	83.2%	84.4%	1,870	2,122	2,155
Dependent Children	Dependent Child.	58.7%	59.5%	58.7%	1,362	1,517	1,497
	No Dep. Child.	41.3%	40.5%	41.3%	957	1,034	1,055
Certification***	Fully-Certified	92.1%	94.0%	92.5%	2,135	2,398	2,362
	Partly-Certified	7.9%	6.0%	7.5%	184	153	191
Degree Level	MA or Higher	47.3%	47.5%	47.3%	1,096	1,212	1,208
	BA or Lower	52.7%	52.5%	52.7%	1,223	1,339	1,344
Major / Minor in MTA	Major / Minor	75.6%	73.2%	72.9%	1,754	1,867	1,862
	No Major / Minor	24.4%	26.8%	27.1%	565	684	690
Not Become Teacher	Not Become Again	23.8%	18.8%	19.3%	552	480	492
	Become Again	76.2%	81.2%	80.7%	1,767	2,071	2,060

Note. See Table 22 for national estimates of total teachers and sample sizes. Data from the 1987-88, 1990-91, and 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]The statistical significance of an association between each teacher characteristic variable and the "column percentages" for each of three school years (e.g.,a 2x3 contingency table for sex) was computed by chi square tests (*p<.05, **p<.01, ***p<.001).

[b]Column percentages based on weighted national estimates of teachers.

Table 22. *National Trends in Teacher Employment Variables: Percentage Distributions and National Estimates of the Numbers of Teachers in Public Schools for Three School Years (1987-88, 1990-91, 1993-94)*

Teacher Employment Variables[a]		Column Percentages[b]			Weighted National Estimates (1000s)		
Name	Levels	1987-88	1990-91	1993-94	1987-88	1990-91	1993-94
Employment Status***	Reg./Full-Time	90.3%	91.3%	90.9%	2,094	2,330	2,321
	Irreg./Part-Time	9.7%	8.7%	9.1%	225	221	231
Salary (N/A) (Deciles)	$45,508 - $90,000	12.0%	15.8%	14.6%	279	403	373
	$40,018 - $45,500	10.6%	12.4%	9.8%	246	317	249
	$36,000 - $40,000	10.9%	9.7%	12.8%	253	248	327
	$32,500 - $35,998	9.6%	11.0%	9.8%	222	281	250
	$30,000 - $32,498	10.0%	9.5%	11.3%	232	243	289
	$27,802 - $29,999	9.9%	8.7%	8.5%	230	221	216
	$25,004 - $27,800	10.7%	9.8%	9.5%	248	249	243
	$23,001 - $25,000	8.9%	8.0%	8.1%	207	205	207
	$20,002 - $23,000	9.2%	8.8%	8.7%	213	225	222
	$0 - $20,000	8.2%	6.2%	6.8%	190	158	174
Teaching Level**	Secondary Teacher	46.1%	48.2%	48.2%	1,069	1,229	1,229
	Elementary Teacher	53.9%	51.8%	51.8%	1,250	1,322	1,323
Teaching Field***	Voc. Ed./Business	7.6%	6.7%	6.0%	176	172	154
	Phys. Ed./Health	5.7%	5.5%	5.7%	132	141	146
	General Secondary	39.4%	39.3%	39.5%	915	1,003	1,009
	General Elementary	37.0%	37.7%	38.1%	857	961	973
	Special Education	10.3%	10.7%	10.6%	240	274	270
Teacher Control	High Class Control	94.8%	96.4%	86.3%	2,199	2,460	2,203
	Low Class Control	5.2%	3.6%	13.7%	120	91	349
Community Type[c], ***	Central City	27.7%	27.1%	31.2%	596	663	795
	Suburban	30.5%	30.5%	29.8%	656	746	760
	Rural/Small Town	41.8%	42.4%	39.1%	901	1,038	997
Region***	Northeast	21.3%	20.8%	20.2%	495	532	515
	Midwest	26.3%	25.6%	25.0%	610	653	637
	South	35.2%	35.8%	36.9%	817	912	941
	West	17.1%	17.8%	18.0%	397	455	459
Total Teachers	Column %	100%	100%	100%			
	National Estimate				2,319,134	2,550,991	2,552,121
	SE National Estimate				13,089	20,997	20,828
	Sample (N)				40,522	46,599	46,994

Note. Data from the 1987-88, 1990-91, and 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]The statistical significance of an association between each teacher employment variable and the "column percentages" for each of three school years (e.g., a 2x3 contingency table for employment status) was computed by chi square tests (*p<.05, **p<.01, ***p<.001). [No test was computed for the salary variable because the decile categories were set for 1993-94, and used for the two prior years inflation of salaries over the six-year period precluded a meaningful test of statistical significance.]

[b]Column percentages based on weighted national estimates of teachers.

[c]Column percentages for 1987-88 and 1990-91 are based on slightly reduced sample sizes.

Table 23. *Teacher Characteristic Variables Associated with Continuing Versus Entering Teachers in Public Schools Nationally for Three School Years (1987-88, 1990-91, 1993-94)*[a]

Teacher Characteristic Variables[b]		Percent Continuing			Odds Ratios[c]			
Name	Levels[a]	87-88	90-91	93-94	87-88	90-91	93-94	95% Confidence Limits: 93-94
Sex	Female	92.9%	93.2%	93.7%	0.65	0.71	0.99	0.88- 1.11
	Male[a]	95.2%	95.1%	93.8%				
Race/Ethnicity	White, Non-Hisp.	93.5%	93.7%	93.9%	0.91	0.94	1.32	1.11- 1.55
	Non-White[a]	94.0%	94.1%	92.2%				
Age Deciles	55 +	98.9%	98.6%	98.9%	29.46	23.86	31.92	21.88-46.26
	51 - 54	98.4%	97.6%	98.0%	20.84	13.64	17.94	12.72-25.46
	48 - 50	96.9%	97.8%	98.2%	10.42	14.96	19.17	14.32-25.49
	46 - 47	96.1%	97.7%	97.6%	8.32	13.75	14.46	11.13-18.74
	44 - 45	95.3%	95.6%	95.6%	6.70	7.12	7.86	6.02-10.22
	42 - 43	94.7%	95.2%	96.3%	5.93	6.50	9.43	7.57-11.65
	38 - 41	93.8%	93.9%	94.6%	5.05	5.05	6.25	4.99- 7.79
	34 - 37	93.2%	93.3%	94.2%	4.60	4.61	5.80	4.82- 7.00
	30 - 33	91.4%	91.8%	90.7%	3.53	3.70	3.49	2.90- 4.20
	20 – 29[a]	75.0%	75.2%	73.5%				
Ever Married	Ever Married	94.5%	94.9%	95.1%	2.36	2.83	3.39	3.01- 3.81
	Never Married[a]	87.9%	86.9%	85.3%				
Marital Status	Married	94.4%	95.0%	89.7%	1.62	1.97	2.28	2.06- 2.50
	Not Married[a]	91.2%	90.6%	95.2%				
Child Under Six Years	Child < 6	92.8%	93.1%	92.8%	0.87	0.87	0.84	0.74- 0.94
	No Child < 6[a]	93.7%	93.9%	93.9%				
Dependent Children	Dependent Children	94.6%	95.0%	95.4%	1.54	1.64	2.00	1.81- 2.19
	No Dep. Children[a]	92.0%	92.0%	91.3%				
Certification	Fully-Certified	94.5%	94.8%	95.0%	3.75	5.52	5.56	4.78- 6.39
	Partly-Certified[a]	82.2%	76.9%	77.4%				
Degree Level	MA or Higher	96.3%	97.0%	97.0%	2.52	3.22	3.31	2.95- 3.74
	BA or Lower[a]	91.1%	90.9%	90.7%				
Major/Minor in MTA	Major/Minor	94.2%	94.5%	94.2%	1.28	1.52	1.29	1.17- 1.46
	No Major/Minor[a]	92.6%	91.9%	92.5%				

Note. Data from the 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]The supply dependent variable was coded as follows: continuing teachers=1; entering teachers=0. The predictor variables were all treated as indicator variables with the lower level listed as the reference category coded as "0." The other (comparison) levels were each coded as "1."

[b]See Glossary for more information about teacher characteristic variables.

[c]Ratio of the odds of being a continuing teacher (see Glossary).

Table 24. *Teacher Employment Variables Associated with Continuing Versus Entering Teachers in Public Schools Nationally for Three School Years (1987-88, 1990-91, 1993-94)*[a]

Teacher Employment Variables[b]		Percent Continuing			Odds Ratios[c]			
Name	Levels	87-88	90-91	93-94	87-88	90-91	93-94	95% Confidence Limits: 93-94
Employment Status	Reg./Full-Time	94.2%	94.4%	94.3%	2.30	2.54	2.38	2.02- 2.81
	Irreg./Part-Time[a]	87.6%	86.9%	87.5%				
Salary Deciles	$45,508- $90,000	99.0%	99.3%	99.3%	27.19	37.01	41.44	22.13-76.96
	$40,018- $45,500	98.5%	98.8%	99.0%	17.92	22.36	29.51	19.38-44.50
	$36,000- $40,000	98.5%	98.9%	98.5%	18.16	25.87	19.14	12.71-28.72
	$32,500- $35,998	97.7%	97.9%	97.8%	11.73	12.90	12.80	9.38-17.49
	$30,000- $32,498	96.6%	96.4%	96.6%	7.92	7.53	8.31	6.70-10.36
	$27,802- $29,999	94.5%	92.5%	94.8%	4.69	3.44	5.28	4.07- 6.80
	$25,004- $27,800	92.8%	92.1%	89.6%	3.54	3.25	2.50	2.07- 3.04
	$23,001- $25,000	89.3%	88.5%	89.9%	2.29	2.14	2.59	2.16- 3.09
	$20,002- $23,000	84.7%	82.0%	82.6%	1.52	1.27	1.38	1.14- 1.66
	$0- $20,000[a]	78.4%	78.2%	77.5%				
Teaching Level	Secondary Teacher	94.4%	94.5%	93.2%	1.30	1.28	0.85	0.76- 0.95
	Elementary Teacher[a]	92.8%	93.1%	94.2%				
Teaching Field	Voc. Ed./Business	96.2%	95.6%	94.6%	2.33	2.11	1.36	1.04- 1.78
	Phys. Ed./Health	95.7%	95.7%	93.5%	2.08	2.13	1.12	0.86- 1.48
	General Secondary	93.7%	94.2%	93.0%	1.39	1.57	1.03	0.87- 1.21
	General Elementary	93.1%	93.4%	94.7%	1.26	1.38	1.38	1.09- 1.73
	Special Education[a]	91.5%	91.2%	92.3%				
Community Type	Central City	93.5%	93.7%	93.9%	1.01	0.99	1.09	0.92- 1.27
	Suburban	93.8%	94.0%	93.8%	1.06	1.04	1.07	0.96- 1.20
	Rural/Small Town[a]	93.4%	93.6%	93.4%				
Region	Northeast	94.4%	95.7%	95.0%	1.34	1.92	1.41	1.11- 1.78
	Midwest	94.6%	94.8%	94.6%	1.41	1.55	1.30	1.09- 1.54
	South	92.7%	92.8%	92.7%	1.03	1.10	0.95	0.80- 1.13
	West[a]	92.6%	92.1%	93.1%				

Note. Data from the 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]The supply dependent variable was coded as follows: continuing teachers=1; entering teachers=0. The predictor variables were all treated as indicator variables with the lower level listed as the reference category coded as "0." The other (comparison) levels were each coded as "1."

[b]See Glossary for more information about teacher employment variables.

[c]Ratio of the odds of being a continuing teacher (see Glossary).

Table 25. *Predicting Continuing Versus Entering Teachers in Public Schools Nationally: Full Logistic Regression Models for Three School Years (1987-88, 1990-91, 1993-94)*[a]

Predictor Variables[b]		School Year					
		1987-88		1990-91		1993-94	
Name	Level[a]	Odds Ratio[c]	Confidence Limits[c]	Odds Ratio[c]	Confidence Limits[c]	Odds Ratio[c]	Confidence Limits[c]
Sex	Female	0.94	0.83-1.07	0.98	0.86- 1.12	1.08	0.95- 1.23
	Male[a]						
Race	White	0.95	0.80-1.13	0.91	0.75- 1.11	1.17	0.97- 1.39
	Non-White[a]						
Age	> 47 years	2.76	2.30-3.35	2.41	1.97- 2.95	3.53	2.79- 4.46
	39 – 47 years	1.36	1.20-1.55	1.41	1.16- 1.70	1.84	1.59- 2.14
	< 39 years[a]						
Ever Married	Ever Married	1.42	1.25-1.61	1.75	1.46- 2.10	1.74	1.48- 2.04
	Never Married[a]						
Dependent Children	Dep Child	1.19	1.05-1.36	1.21	1.05- 1.40	1.36	1.18- 1.58
	No Dep Child[a]						
Certification	Full Cert	2.69	2.35-3.08	3.44	2.97- 4.03	3.50	2.94- 4.15
	Part Cert[a]						
Degree Level	Masters	1.20	1.07-1.34	1.38	1.17- 1.62	1.36	1.17- 1.56
	Bachelors[a]						
Employment Status	Reg./FT	1.81	1.60-2.03	1.73	1.41- 2.14	1.98	1.63- 2.39
	Irreg./PT[a]						
Salary	>$36K	6.97	5.23-9.26	9.69	6.95-13.48	7.96	5.65-11.12
	$25–$36K	2.77	2.47-3.12	2.83	2.52- 3.18	2.49	2.16- 2.86
	<$25K[a]						
Teaching Level	Secondary	0.94	0.80-1.10	0.95	0.82- 1.08	0.74	0.62- 0.88
	Elementary[a]						
Teaching Field	Voc.Ed./Bus	1.45	1.15-1.82	1.47	1.08- 2.03	1.12	0.82- 1.52
	Phys. Ed./Hlth	1.72	1.23-2.39	2.14	1.42- 3.21	1.03	0.76- 1.39
	Gen Secondary	1.07	0.92-1.25	1.39	1.11- 1.74	1.09	0.90- 1.33
	Gen Elem	0.90	0.77-1.06	1.08	0.84- 1.37	0.95	0.74- 1.23
	Special Ed[a]						
Concordance Index (c)[d]		0.795		0.821		0.829	
GOF Test (χ^2)[e]		$p<.05$		$p<.05$		$p>.05$	

Note. Data from the 1987-88, 1990-91, and 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]The supply dependent variable was coded as follows: continuing teachers=1; entering teachers=0. The predictor variables were all treated as indicator variables with the lower level listed as the reference category coded as "0." The other (comparison) levels were each coded as "1."

[b] See Glossary and Tables 21 through 24 for more information about predictor variables.

[c]Ratio of the odds of being a continuing teacher (see Glossary). Confidence limits are 95%. The SAS formula for converting an odds ratio to its Beta weight is: LOG(OR).

[d]The concordance index (c) estimates the probability that the model correctly orders a randomly selected pair of teachers (one entering, the other continuing). It is equal to the area under a receiver operating characteristics curve (ROC) and is arithmetically equivalent to one-half Summer's D rank correlation index plus 0.5.

[e]Hosmer-Lemeshow Goodness-of-Fit Test.

Table 26. *Predicting Continuing Versus Entering Teachers in Public Schools Nationally: Reduced Logistic Regression Models for Three School Years (1987-88, 1990-91, 1993-94)*[a]

Predictor Variables[b]		School Year					
		1987-88		1990-91		1993-94	
Name	Level[a]	Odds Ratio[c]	Confidence Limits[c]	Odds Ratio[c]	Confidence Limits[c]	Odds Ratio[c]	Confidence Limits[c]
Age	> 47 years	3.07	2.56-3.66	2.94	2.41- 3.60	4.44	3.50- 5.62
	39 – 47 years	1.58	1.41-1.78	1.78	1.46- 2.13	2.47	2.13- 2.84
	< 39 years[a]						
Certification	Full Certification	2.86	2.50-3.27	3.66	3.17- 4.25	3.87	3.28- 4.54
	Part Certification[a]						
Salary	>$36,000	7.57	5.77-9.84	10.76	7.64-14.99	8.38	6.15-11.51
	$25–$36,000	2.93	2.63-3.30	2.98	2.67- 3.32	2.59	2.27- 2.95
	< $25,000[a]						
Employment Status	Regular/Full-Time	1.68	1.49-1.90	1.53	1.26- 1.88	1.71	1.43- 2.06
	Irregular./Part-Time[a]						
Concordance Index (c)[d]		0.788		0.812		0.821	
GOF Test (χ^2)[e]		$p<.05$		$p<.05$		$p>.10$	

Note. Data from the 1987-88, 1990-91, and 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]The supply dependent variable was coded as follows: continuing teachers=1; entering teachers=0. The predictor variables were all treated as indicator variables with the lower level listed as the reference category coded as "0." The other (comparison) levels were each coded as "1."

[b]See Glossary and Tables 21 through 24 for more information about predictor variables.

[c]Ratio of the odds of being a continuing teacher (see Glossary). Confidence limits are 95%. The SAS formula for converting an odds ratio to its Beta weight is: LOG(OR).

[d]The concordance index (c) estimates the probability that the model correctly orders a randomly selected pair of teachers (one entering, the other continuing). It is equal to the area under a receiver operating characteristics curve (ROC) and is arithmetically equivalent to one-half Summer's D rank correlation index plus 0.5.

[e]Hosmer-Lemeshow Goodness-of-Fit Test.

Table 27. *Predicting Continuing Versus Entering Teachers in Public Schools: Reduced Logistic Regression Models for Four Regions of the United States Based on Data for School Year 1993-94*[a]

Predictor Variable[b]		Northeast		Midwest		South		West	
Name	Level[a]	Odds Ratio[c]	Confidence Limits[c]	Odds Ratio[c]	Confidence Limits[c]	Odds Ratio[c]	Confidence Limits[c]	Odds Ratio[c]	Confidence Limits[c]
Age	> 47 years	6.67	3.30-13.57	5.84	4.13- 8.34	3.38	2.38- 4.82	3.51	2.02- 6.03
	39 – 47 years	2.71	1.79- 4.13	2.59	2.11- 3.16	2.45	1.97- 3.07	1.83	1.34- 2.48
	< 39 years[a]								
Certification	Full Certification	2.33	1.56- 3.52	2.73	2.15- 3.44	5.35	4.19- 6.87	3.24	1.80- 5.78
	Part Certification[a]								
Salary	>$36,000	9.31	5.40-16.01	12.10	6.85-21.25	6.88	3.48-13.63	8.48	5.19-13.93
	$25–$36,000	2.21	1.47- 3.29	3.08	2.35- 4.00	3.89	3.05- 4.98	1.70	1.32- 2.18
	<$25,000[a]								
Employment Status	Regular/Full-Time	2.34	1.59- 3.44	2.16	1.65- 2.82	1.19	0.95- 1.48	1.25	0.93- 1.66
	Irregular/Part-Time[a]								
Concordance Index (c)[d]		0.850		0.841		0.816		0.803	
GOF Test (χ^2)[e]		p>.20		p>.20		p>.20		p>.05	

Note. Data from the 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]The supply dependent variable was coded as follows: continuing teachers=1; entering teachers=0. The predictor variables were all treated as indicator variables with the lower level listed as the reference category coded as "0." The other (comparison) levels were each coded as "1."

[b]See Glossary and Tables 21 through 24 for more information about predictor variables.

[c]Ratio of the odds of being a continuing teacher (see Glossary). Confidence limits are 95%. The SAS formula for converting an odds ratio to its Beta weight is: LOG(OR).

[d]The concordance index (c) estimates the probability that the model correctly orders a randomly selected pair of teachers (one entering, the other continuing). It is equal to the area under a receiver operating characteristics curve (ROC) and is arithmetically equivalent to one-half Summer's D rank correlation index plus 0.5.

[e]Hosmer-Lemeshow Goodness-of-Fit Test.

Table 28. *Predicting Experienced Versus First-Time Teachers Entering Public Schools Nationally: Full and Reduced Logistic Regression Models Based on Data for School Year 1993-94*[a]

Predictor Variables[b]		Full Regression Model		Reduced Regression Model	
Name	Level[a]	Odds Ratio[c]	Confidence Limits[c]	Odds Ratio[c]	Confidence Limits[c]
Sex	Female	1.37	0.94- 1.98		
	Male[a]				
Race	White	0.93	0.63- 1.39		
	Non-White[a]				
Age	> 47 years	5.37	3.33- 8.66	6.36	3.85-10.50
	39 – 47 years	2.78	1.87- 4.10	3.23	2.33- 4.45
	< 39 years[a]				
Ever Married	Ever Married	1.84	1.23- 2.76	1.82	1.27- 2.61
	Never Married[a]				
Child < 6	Child < 6 years old	1.87	1.19- 2.95	1.99	1.37- 2.90
	No Child < 6[a]				
Dependent Children	Dependent Children	1.07	0.66- 1.70		
	No Dep Children[a]				
Certification	Full Certification	1.81	1.33- 2.49	1.85	1.38- 2.45
	Part Certification[a]				
Degree Level	Masters	1.88	1.30- 2.71		
	Bachelors[a]				
Employment Status	Regular/Full-Time	0.82	0.56- 1.20		
	Irregular/Part-Time[a]				
Salary	>$36,000	14.74	8.01-27.10	19.17	10.67-34.20
	$25–$36,000	2.76	2.02- 3.73	2.96	2.18- 3.97
	<$25,000[a]				
Teaching Level	Secondary	1.10	0.74- 1.61		
	Elementary[a]				
Not Become Teacher	Not Become Again	3.32	2.28- 4.84	3.47	2.39- 5.10
	Become Again[a]				
Teaching Field	Voc Ed/Business	0.82	0.44- 1.52		
	Physical Ed./Health	1.16	0.67- 1.98		
	General Secondary	0.82	0.55- 1.22		
	General Elementary	0.66	0.40- 1.09		
	Special Education[a]				
Concordance Index (c)[d]		0.817		0.807	
GOF Test (χ^2)[e]		p>.05		p>.20	

Note. Data from the 1993-94 Schools and Staffing Survey, National Center for Education Statistics. USDE.

[a]The supply dependent variable was coded as follows: experienced teachers=1; first-time teachers=0. The predictor variables were all treated as indicator variables with the lower level listed as the reference category coded as "0." The other (comparison) levels were each coded as "1."

[b]See Glossary and Tables 21 through 24 for more information about predictor variables.

[c]Ratio of the odds of being an experienced teacher (see Glossary). Confidence limits are 95%. The SAS formula for converting an odds ratio to its Beta weight is: LOG(OR).

[d]The concordance index (c) estimates the probability that the model correctly orders a randomly selected pair of teachers (one experienced, the other first-time). It is equal to the area under a receiver operating characteristics curve (ROC) and is arithmetically equivalent to one-half Summer's D rank correlation index plus 0.5.

[e]Hosmer-Lemeshow Goodness-of-Fit Test.

Table 29. *Predicting Established Versus Transitional Teachers Continuing in Public Schools Nationally: Full and Reduced Logistic Regression Models Based on Data for School Year 1993-94*[a]

Predictor Variables[b]		Full Regression Model		Reduced Regression Model	
Name	Level[a]	Odds Ratio[c]	Confidence Limits[c]	Odds Ratio[c]	Confidence Limits[c]
Sex	Female	0.97	0.87-1.08		
	Male[a]				
Race	White, Non-Hispanic	1.12	1.00-1.25		
	Non-White[a]				
Age	> 47 years	3.09	2.72-3.52	3.03	2.71-3.40
	39 – 47 years	2.07	1.84-2.34	2.20	2.02-2.40
	< 39 years[a]				
Ever Married	Ever Married	1.12	1.00-1.25		
	Never Married[a]				
Child < 6	Child < 6 years old	1.22	1.05-1.43		
	No Child < 6[a]				
Dependent Children	Dependent Children	1.20	1.07-1.34		
	No Dep Children[a]				
Certification	Full Certification	2.32	1.99-2.70		
	Part Certification[a]				
Degree Level	Masters	1.09	1.00-1.19		
	Bachelors[a]				
Major/Minor in MTA	Major/Minor	1.55	1.42-1.69	1.69	1.56-1.84
	No Major/Minor[a]				
Employment Status	Regular/Full-Time	1.56	1.39-1.76		
	Irregular/Part-Time[a]				
Salary	>$36,000	3.08	2.70-3.55	2.88	2.59-3.22
	$25–$36,000	1.58	1.46-1.72	1.54	1.44-1.64
	<$25,000[a]				
Teaching Level	Secondary	0.97	0.85-1.11		
	Elementary[a]				
Teacher Control	High Control	1.36	1.21-1.54		
	Low Control[a]				
Teaching Field	Voc Ed/Business	1.70	1.42-2.03	1.84	1.57-2.16
	Physical Ed/Health	1.24	0.99-1.54	1.28	1.04-1.58
	General Secondary	1.15	1.00-1.32	1.12	0.99-1.26
	General Elementary	1.28	1.09-1.48	1.32	1.15-1.52
	Special Education[a]				
Community Type	Central City	0.69	0.62-0.76		
	Suburban	0.66	0.60-0.73		
	Rural/Small Town[a]				
Concordance Index (c)[d]		0.730		0.709	
GOF Test (χ^2)[e]		$p<.05$		$p>.05$	

Note. Data from the 1993-94 Schools and Staffing Survey, National Center for Education Statistics, USDE.

[a]The supply dependent variable was coded as follows: established teachers=1; transitional teachers=0. The predictor variables were all treated as indicator variables with the lower level listed as the reference category coded as "0." The other (comparison) levels were each coded as "1."

[b] See Glossary and Tables 21 through 24 for more information about predictor variables.

[c]Ratio of the odds of being an established teacher (see Glossary). Confidence limits are 95%. The SAS formula for converting an odds ratio to its Beta weight is: LOG(OR).

[d]The concordance index (c) estimates the probability that the model correctly orders a randomly selected pair of teachers (one transitional, the other established). It is equal to the area under a receiver operating characteristics curve (ROC) and arithmetically equivalent to one-half Summer's D rank correlation index plus 0.5.

[e]Hosmer-Lemeshow Goodness-of-Fit Test.

REFERENCES

Boe, E. E., Bobbitt, S. A., Cook, L. H., Barkanic, G., & Maislin, G. (1998). Turnover of Teachers for Eight Cognate Areas: National Trends and Predictors. (Data Analysis Report No. 1998-DAR3). Philadelphia: University of Pennsylvania, Graduate School of Education, Center for Research and Evaluation in Social Policy.

Boe, E. E., Cook, L. H., Bobbitt, S. A., & Terhanian, G. (1998). The shortage of fully-certified teachers in special and general education. Teacher Education and Special Education, 21, 1-21.

Choy, S. P., Henke, R. R., Alt, M. N., Medrich, E. A., & Bobbitt, S. A. (1993). Schools and staffing in the United States: A statistical profile, 1990-91. Washington, DC: National Center for Education Statistics, U.S. Department of Education.

Choy, S. P., Medrich, E. A., Henke, R. R., & Bobbitt, S. A. (1992). Schools and staffing in the United States: A statistical profile, 1987-88. Washington, DC: National Center for Education Statistics, U.S. Department of Education.

Harrell, F. E., Jr., Lee, K. L., & Mark, D. B. (1996). Multivariate prognostic models: Issues in developing models, evaluating assumptions and adequacy, and measuring and reducing errors. Statistics in Medicine, 15, 361-387.

Henke, R. R., Choy, S. P., Geis, S., & Broughman, S. P. (1996). Schools and staffing in the United States: A statistical profile, 1993-94. Washington, DC: National Center for Education Statistics, U.S. Department of Education.

Hosmer, D. W., & Lemeshow, S. (1989). Applied Logistic Regression. New York: Wiley.

Kaufman, S., & Huang, H. (1993). 1990-91 Schools and Staffing Survey: Sample design and estimation (NCES 93-449). Washington, DC: National Center for Education Statistics, U.S. Department of Education.

National Center for Education Statistics (1996). An overview of the schools and staffing survey (SASS). Washington, DC: National Center for Education Statistics, U.S. Department of Education.

Rollefson, M., & Broughman, S. (1994). Teacher supply in the United States: Sources of newly hired teachers in public and private schools, 1988-1991 (NCES 95-348). Washington, DC: National Center for Education Statistics, U.S. Department of Education.

Snyder, T. D., Hoffman, C. M., & Geddes, C. M. (1997). Digest of education statistics: 1997. Washington DC: National Center for Education Statistics, U.S. Department of Education.

Whitener, S. D., Gruber, K. J., & Lynch, H., Tingos, K, Perona, M., & Fondelier, S. (1997). Characteristics of stayers, movers, and leavers: Results from the Teacher Followup Survey, 1994-95 (NCES 97-450). Washington, DC: National Center for Education Statistics, U.S. Department of Education.

APPENDIX A: DATA ANALYSIS METHODS

Data Sources

Public School Teacher Questionnaire: Schools and Staffing Surveys

One source of data was teachers' self reports to the Public School Teacher Questionnaires (PSTQ) of the 1987-88, 1990-91, and 1993-94 Schools and Staffing Survey (SASS), conducted by the National Center for Education Statistics (NCES), U.S. Department of Education. Information from the PSTQs was used in these analyses to identify employed teachers who had entered teaching during the years of the surveys and others who had continued as employed teachers from the years prior to the surveys. Such teachers were analyzed as a function of various sources of teacher supply.

The PSTQ data were obtained from three large national-probability samples of K - 12 public school teachers (N = 40,522 teachers in early 1988, N = 46,599 teachers in early 1991, and N = 46,944 in early 1994) with high weighted response rates (86% in 1988, 91% in 1991, and 88% in 1994). Therefore, this data base provides nationally representative estimates of the numbers of public school teachers in each of the three survey years, including sources of teacher supply (e.g., entering recent degree graduates, delayed entering degree graduates, reentering experienced teachers, continuing teachers, etc.) and whether their main teaching assignment was in one of eight cognate areas. Furthermore, there are no missing data for completed PSTQs because NCES has imputed values for item nonresponse. More detailed information about SASS is found in an overview published by NCES (1996), and in technical descriptions published by NCES (e.g., see Choy, Medrich, Henke, & Bobbitt, 1992, Appendix A for the 1987-88 SASS; Choy, Henke, Alt, Medrich, & Bobbitt, 1993, Appendix C, for the 1990-91 SASS; and Henke, Choy, Geis, & Broughman, 1996, Appendix C, for the 1993-94 SASS).

Sources of the Community Type Variable

The community type variable was scaled by seven levels (large city, mid-size city, urban fringe of large city, urban fringe of mid-size city, large town, small town, and rural). For the 1987-88 SASS, a community type code for each public school teacher was based upon the postal ZIP code of school in which the teacher was employed, and matched to the U.S. Census community size for that ZIP code. For the 1990-91 and 1993-94 SASSs, each public

school teacher was given a community type code by matching the postal ZIP code of the school in which the teacher was employed to the LOCALE code on the NCES's Common Core of Data School File.

Teacher Sample

In keeping with the SASS definition based on teacher self reports to PSTQs, a teacher was any individual employed either full-time or part-time at a public school who reported his/her main assignment as teaching in any grade(s) K - 12, including itinerant teachers and long-term substitutes. Excluded from this definition of a teacher were individuals who identified their main assignment as pre-kindergarten teacher, short-term substitute, student teacher, teacher aide, or a non-teaching specialist of any kind.

The sizes of the samples of teachers used in the various analyses are presented in the several tables of results.

Procedures

Descriptive Trends in Teacher Supply: Tables 1 - 20

Based on the sample sizes reported in the Tables 1 through 20, weighted national estimates of the numbers of teachers (as well as their percentages and standard errors) were computed by special procedures developed by NCES for complex sample survey data (Kaufman & Huang, 1993) for the various sources of teacher supply. These national estimates were used in the statistical analyses testing for associations among variables. Because SASS data are subject to design effects due to stratification and clustering of the sample, standard errors for the national estimates were computed using the method of balanced repeated replications with the statistical software "WesVarPC".

Logistic Regression of Teacher Supply: Tables 21 - 29

Logistic regression analyses of three major dimensions of sources of teacher supply (i.e., dependent variables) were performed by the series of procedures described below in sequence. The dichotomous dependent variables analyzed were: (a) continuing versus entering teachers (coded 1 vs. 0; see also Tables 25 and 26), (b) entering experienced versus first-time teachers (coded 1 vs. 0; see also Table 28), and (c) continuing established versus transitional teachers (coded 1 vs. 0; see also Table 29).

1. A comprehensive set of potential independent (i.e., predictor) variables was identified that might be associated with one or more of the three supply variables and that were

available from SASS for 1993-94. These variables are listed in Table A-1 (along with their coding) and defined connotatively in Appendix B (Glossary). Operational definitions of variables analyzed in this research are available upon request from the senior author.

2. Potential predictor variables listed in Table A-1 were subjected to the following analyses based on the 1993-94 SASS:
   a. Reduction of sample size: A few variables were defined by responses to the Public School Questionnaire of SASS. For teachers whose schools did not respond to the school questionnaire, there were missing data for such teachers with respect to variables originating in this questionnaire. A few predictor variables were excluded from further use due to such missing data, as indicted by Superscript "a" to the variables listed in Table A-1.
   b. Association with dependent variables: The association of each predictor variable of Table A-1 with each of the three dependent supply variables was examined separately by means of a series of bivariate logistic regression analyses as computed by the statistical software SAS. A few variables were excluded from further use due to low associations with all three supply variables (i.e., typically with odds ratios less than 1.10 that were not statistically significant, as computed by SAS using the NORMWT option), as indicated by Superscript "b" to the variables listed in Table A-1. Thus, all predictor variables without a superscript "a" or "b", as listed in Table A-1, were used in one or more of the logistic regression analyses described below.
   c. Variable scaling: Several different forms of a few predictor variables were analyzed by the procedures described above. For example, the age variable was analyzed as a continuous variable scaled in years and in deciles. In addition, the age factor categorized in deciles, quintiles, and three levels was analyzed as indicator variables, with the latter version selected for use because it consistently produced regression models that satisfied the Hosmer-Lemeshow goodness-of-fit (GOF) test and yielded results that were relatively simple to interpret, as shown in Tables 23-29. Similar analyses were made of the salary variable. For both the age and salary decile variables, the upper and lower limits of the decile categories were based on the unweighted SASS sample instead of on the weighted nationally-estimated number of teachers for computational efficiency. In a second example, the dichotomous employment status variable (Regular/Full-Time vs. Irregular/Part-Time) was a composite variable based on two separate dichotomous variables: Regular versus Irregular Teachers and Full-Time versus Part-Time Teachers (as defined in the Glossary). The

Table A-1. *List of Potential Predictor Variables Analyzed Along with Coding of Variable Levels*

Teacher Characteristic Variables

Demographic Variables

Sex: female (code = 1) vs. male (code = 0)
Race/Ethnicity: White (excluding Hispanic) (1) vs Non-white (including Hispanic) (0)
Age (Trichotomous): oldest 3 deciles (1), middle 4 deciles (1), vs youngest 3 deciles (0)
Ever Married: ever married (1) vs. never married (0)
Marital Status: married now (1) vs not married now (0)
Child Under Six Years: at least one child under age 6 years (1) vs. no child under 6 (0)
Dependent Children: at least one dependent child (1) vs. no dependent child (0)

Qualification variables

Certification: fully certified in main teaching assignment (1) vs. partly certified (0)
Degree Level: masters or higher (1) vs. bachelors or lower (0)
Major/Minor in MTA: major/minor in main teaching assignment (1) vs no such major/minor (0)
Age of degree: number of years since earning most recent degree[a]
Not become teacher: would not become teacher again (1) vs would become teacher again (0)

Teacher Employment Variables

Working Conditions

Employment Status: regular/full-time employment (1) vs. irregular and/or part-time (0)
Salary (Trichotomous): highest 3 deciles (1), middle 4 deciles (1), vs lowest 3 deciles (0)
Extra Pay: any earned income during academic year in addition to base salary (1) vs. none (0)[b]
Teaching Level: secondary (1) vs. elementary (0)
Teaching Field:
- general elementary (1)
- general secondary (1)
- physical education (1)
- vocational education (1)
- special education (0)

Teacher Control: teachers reporting high classroom control (1) vs. moderate or low control (0)
Self-Contained Classroom: self-contained classroom vs. all others[b]
Average Class Size[a,b]
Minority enrollment: > = 20% minority enrollment (1) vs. < 20% minority enrollment (0)[b]
Readiness to Learn: teachers' judge their students are ready to learn (1) vs not ready (0)[b]

School Environment

School Size[a,b]
Community Type: central city (1), suburban (1), vs. rural/small town (0)
Region: Northeast (1), Midwest (1), South (1), vs West (0)

Note: See Glossary for variable definitions.
[a]Reduced sample size. [b]Low association with dependent variables.

final form of such variables selected for use in further analyses was based on consideration of three factors: (a) the strength of associations with dependent variables, (b) consistency with satisfying the GOF test, and (c) simplicity. The final form for each variable used in the main logistic regression analyses is listed in Table A-1. All such variables were analyzed as indicator variables.

d. Refined set of predictor variables used: The set of predictor variables selected (from step "b" above) in the form used (from step "c" above), and their bivariate associations (i.e., odds ratios) with each of the continuing versus entering teacher supply variable, are shown in Tables 23 and 24. (See also step 7 below.)

3. Because the age variable was both a basic demographic variable and strongly related to continuing versus entering teachers (see Table 23), the possibility of an interaction of the age variable with each predictor variable was examined separately by means of a series of logistic regression analyses incorporating two predictor variables (age plus one other variable). Partly because of the large sample sizes provided by SASS, it was common to find statistically significant interactions of age with other predictor variables with respect to each of the three teacher supply variables. When included in larger logistic regression analyses, however, such interactions of age with other variables typically were of negligible value in increasing either the predictive power of regression models or in satisfying the GOF test. Consequently, the *c* indices for the logistic regression analyses of pairs of predictor variables with, and without, the interaction term were compared. If the interaction version of such logistic regressions increased the *c* index by 0.01, or greater, the interaction term was used in a full regression model to determine whether it contributed to the model's predictive power and/or to satisfying the GOF test. No interaction term met this criterion for inclusion in subsequent analyses.

4. Predictor variables that were significantly associated with a dependent variable (from step 2.b. above) were selected for inclusion in full logistic regression models (such as reported in Table 25 for continuing versus entering teachers).[4] In addition, a basic set of predictor variables (age, sex, race, certification, salary, teaching level, and teaching field) was included in the full logistic regression models of all three dependent supply

---

[4]If included in the full logistic regression model for continuing versus entering teachers in 1993-94 (see Table 25), the region variable added negligible predictive utility to that provided by other predictor variables, as measured by the increment to the *c* index produced by adding the region variable to the model. Consequently, the region variable was excluded and used as a replication variable as shown in Table 27 and discussed on Page 12.

variables regardless of the size or significance of their bivariate association with each dependent variable (see Tables 25, 28, and 29).

5. Upon fitting a full logistic regression model to a dependent variable, the variables with the greatest predictive power were selected and used to construct a reduced logistic regression model so as to attain as parsimonious a model as possible, while continuing to satisfy the GOF test and without appreciable loss in predictive power as determined by the magnitude of the decline in the *c* index. These efforts were successful for all three dependent variables analyzed.
6. As an example of fitting full and reduced logistic regression models, consider the dependent variable of continuing versus entering teachers. Teacher characteristic and working condition variables of Tables 23 and 24 were entered into a full logistic regression model with the results shown in Table 25 for 1994. This full model was replicated for 1991 and 1988 SASS data (see Table 25). The variables with the greatest predictive power from the 1994 full model (age, certification, salary, and employment status were entered into a reduced logistic regression model with the results shown in Table 26. This reduced model was also replicated for 1991 and 1988 SASS data (see Table 26). Decreasing the 16 predictor variable parameters of the full model (Table 25) to the 6 parameters of the reduced model (Table 26) resulted in no appreciable loss in predictive power (i.e., the *c* index of 0.829 for the full model was reduced by only .008 to .821 for the reduced model). Therefore, parsimony was achieved in the reduced model without loss of predicative power.
7. Because SASS data are subject to design effects due to stratification and clustering of the sample, standard errors for the *beta* weights computed by SAS systematically underestimated their size. Therefore, the standard errors for beta weights (a) of the bivariate logistic regressions (from which the odds ratios reported in Tables 23 and 24 were computed), and (b) of the logistic regression models reported in Tables 25 through 29, were computed by using the method of balanced repeated replications with the statistical software "WesVarPC". These standard errors were then used to compute the statistical significance of the odds ratios seen in Tables 23 and 24 and the confidence limits for the odds ratios seen in Tables 25 through 29.
8. All logistic regression models included in this report were based on the number of nationally estimated teachers as computed from the SASS weights (rounded to the nearest whole number) for each teacher in the sample. Use of the nationally-weighted number of teachers was necessary to compute accurate *beta* weights, *c* indices, and

tests. Because the logistic regression analyses were based on the nationally estimated number of teachers instead of on the SASS sample, it was necessary to divide the χ^2 computed by SAS for the GOF test by the average weight of teachers in the relevant SASS sample in order for the χ^2 test to be based on true effective sample sizes rather than on the estimated national population.

APPENDIX B: GLOSSARY[5]

Age (Deciles)

The age (deciles) of teachers in years was converted to ranked deciles for each of the three SASS years. The upper and lower limits for each of the decile categories for the 1993-94 school year are shown in Tables 21 and 23.

Age (Trichotomous)

The age (trichotomous) of teachers was defined as a three-category continuous variable in which teacher age is scaled in terms of chronological age from low to high, as follows: young (the first three age deciles ranging from 20 through 37 years), middle (the fourth through seventh age deciles ranging from 38 trough 47 years), and old (the last three age deciles ranging from 48 and higher years). [The age category definitions given here were based on 1993-94 SASS data.]

***c* Index**

See Concordance Index

Child Under Six Years

Child under six years was defined as a dichotomous variable: teachers with one or more children under six years of age versus teachers without a child under six years of age.

Certification

Certification of teachers was defined as a dichotomous variable: fully certified versus partly certified teachers. See Fully-Certified Teachers.

Concordance Index (*c*)

The *c* (for concordance) index is a measure of the strength of the association between one or more independent variables (i.e., predictor variables) and a dichotomous dependent variable such as frequently analyzed by logistic regression. The *c* index estimates the probability that such a regression model correctly orders a randomly selected pair of teachers (e.g., one randomly selected from level "0" of a dichotomous dependent variable, such as entering teachers; the other randomly selected from level "1" of a dichotomous dependent variable, such as continuing teachers). The *c* index ranges from a lower limit of 0.50 to an upper limit of 1.00. More specifically, for any such pair of teachers, the *c* index gives the probability that a correct judgment can be made, by using the beta weights of the logistic regression model, as to which one of the pair of teachers is of the level "0" type (e.g., entering) and which one is of the level "1" type (e.g., continuing). If ($c = 0.50$), the probability of correctly assigning each of a pair of teachers by level is pure chance (i.e., the model has no predictive power); if ($c = 0.75$), the

[5]Operational definitions of variables analyzed in this research are available upon request from the senior author.

probability of correctly assigning each of the pair of teachers by level is 0.75 (i.e., the model provides substantial predictive power); if (c = 1.00), each of the pair of teachers will be correctly assigned by level (i.e., the model has perfect predictive power). The c index is equal to the area under a receiver operating characteristics curve (ROC), and is arithmetically equivalent to one-half Summer's D rank correlation index plus 0.5. More information about the c index can be found in Harrell, Lee, and Mark (1996, pp. 370-71).

Cognate Area

A cognate area is a group of main teaching assignment fields that were judged to be more related to each other in academic content than to different teaching assignments that are classified in other cognate areas (see Main Teaching Assignment). The 1990-91 and 1993-94 SASSs recognized 53 main teaching assignment fields in grades K - 12, including one termed "all others." In order to analyze teacher supply variables as a function of broad teaching assignment categories with a minimum acceptable sample sizes each, these 53 fields were grouped into eight cognate areas as follows:

General Elementary: Kindergarten, General elementary.

Language: English/language arts, English as a second language, Journalism, Reading, French, German, Latin, Russian, Spanish, Other foreign language.

Mathematics/Science: Computer science, Mathematics, Biology/life science, Chemistry, Geology/earth science, Physics, General and all other science.

Social Studies: American Indian studies (Native American), Philosophy, Religion, Social studies/social science.

Arts/Physical Education: Art, Dance, Drama/theater, Music, Physical education/health.

Business/Vocational Education: Home economics, Accounting, Agriculture, Business/marketing, Health occupations, Industrial arts, Trade and industry, Technical, Other vocational/technical education.

Other General Education: Included in this cognate area are main teaching assignments that are not subject matter specific. They are: Basic skills and remedial education, Bilingual education, Gifted, Military science, All others.

Special Education: Special education (general), Emotionally disturbed, Mentally retarded, Speech/language impaired, Deaf and hard-of-hearing, Visually handicapped, Orthopedically impaired, Mildly handicapped, Severely handicapped, Specific learning disabilities, Other special education.

Community Type (Trichotomous)

Community type (trichotomous) was defined as a three-category variable in which communities in which schools were located are scaled in terms of population density from low to high, as follows: (a) Rural/Small Town, (b) Suburban (including large towns, urban fringe of mid-size city, and urban fringe of large city), and (c) Central City (including mid-size city and large city). The locales included in the three categories are:

Rural: A place with fewer than 2,500 people or a place designated as rural by Census.

Small town: A town not within a metropolitan area and with a population less than 25,000 but greater than 2,500.

Large town: A town not inside a metropolitan area, with a population greater than or equal to 25,000.

Urban fringe of a mid-size city: Place with a metropolitan area of mid-size city and defined as urban.

Urban fringe of a large city: Place within a metropolitan area of a large city and defined as urban by Census (i.e., within same county).

Mid-size city: Central city of a standardized metropolitan area having a population less than 400,000 and a population density less than 6,000 people per square mile.

Large city: Central city of a standardized metropolitan area having a population greater than or equal to 400,000 or a population density greater than or equal to 6,000 people per square mile.

Continuing Teachers

Continuing teachers were defined as public school teachers who continued teaching in any school (public or private) from one year to the next.

Degree Level

Degree level was defined as a dichotomous variable: teachers who had earned a masters degree or higher, versus teachers who had earned a bachelors degree or less (including no degree).

Delayed Entrants

Delayed entrants were defined as entering teachers whose most recent degree had been conferred more than one year prior to entering teaching (i.e., first-time teachers and reentering experienced teachers who had earned a degree since last being employed as teachers). See also First-Time Teachers, First-Time Teachers: Delayed Entrants, and Reentering Experienced Teachers.

Dependent Children

Dependent children was defined as a dichotomous variable: teachers with one or more children who depended on them for more than half of their financial support, versus teachers without such dependent children.

Employment Status

See Irregular/Part-Time vs. Regular/Full-Time

Entering Teachers

Entering teachers were defined as individuals who where not teaching in public schools during one year, and who were hired to teach in a public school during the following year. Entering teachers include both entering experienced teachers and first-time teachers.

Entering First-Time Teachers

Entering first-time teachers were defined as entering teachers who had no prior teaching experience in either public or private schools, other than possibly as teacher aides, student teachers, or short-term substitute teachers.

Entering Experienced Teachers

Entering experienced teachers were defined as entering teachers who had prior experience as regular, itinerant, or long-term substitute teachers in either public or private schools. Private school teachers migrating to public schools were also classified as entering experienced teachers.

Established vs. Transitional Teachers

Established teachers were defined as teachers who had remained in one of 54 specific main teaching assignments recognized by SASS for the most recent three or more years and who had been retained in the same school for the most recent three or more years. All other teachers were classified as transitional teachers. The current year was counted as one of the three years.

Ever Married

Ever married was defined as a dichotomous variable: teachers whose current marital status was either married, widowed, divorced, or separated, versus teachers who had never been married.

Experienced Teachers

Experienced teachers were defined as teachers who had at least one year of experience as a regular, itinerant, or long-term substitute teacher in a public or private school, either full-time or part-time.

First-Time Teachers

First-time teachers were defined as entering teachers with no prior teaching experience other than as teacher aides, student teachers, or short-term substitutes.

First-Time Teachers: Delayed Entrants

See First-time teachers and Delayed Entrants.

First-Time Teachers: Recent Graduates

See First-Time Teachers and Recent Graduates.

Full-Time Teachers vs. Part-Time Teachers

Full-time teachers were defined teachers who reported being employed full time as teachers in public schools. All public school teachers who reported being employed less than full time as teachers were defined as part-time teachers.

Fully Certified vs. Partly Certified Teachers

Most public school teachers are fully certified in their main teaching assignment as defined by holding a regular or standard certificate, an advanced professional certificate, or a probationary certificate (a certificate for teachers who have satisfied all requirements for a regular certificate except for completing a probationary period). All teachers lacking in this basic qualification for teaching are classified as partly certified in their main teaching assignments.

Goodness-of-Fit (GOF) Test (χ^2)

The Hosmer-Lemeshow Goodness-of-Fit (GOF) statistic (χ^2) indicates whether the frequencies predicted by a logistic regression model differ significantly from expected frequencies. The model is said to have a good fit to the data if the χ^2 is not statistically significant at $p < 0.05$ level. See also the text by Hosmer and Lemeshow (1989) entitled *Applied Logistic Regression*.

Indicator Variables

Dichotomous variables are also called indicator variables, with one level designated as the reference category (code = 0), and the other level a comparison category (code = 1). In addition, a continuous variable such as age can be blocked into K ordered categories (e.g., the first, second, third, and fourth quartiles). Instead of analyzing such a categorized variable as continuous, it can be analyzed as a series of (K - 1) dichotomous variables, with (K - 1) of the categories being compared with the remaining category designated as the reference category. In this example, the first age quartile might be designated as the reference category (code = 0). The second (code = 1) vs. the first age quartile defines one indicator variable, the third (code = 1) vs. the first age quartile defines a second indicator variable, and the fourth (code = 1) vs. the first age quartile defines a third indicator variable. Thus, the association of the age factor (when so blocked into K ordered categories) with a dichotomous dependent variable can be analyzed as a set of three dichotomous indicator variables providing *beta* coefficients for each indicator variable and associated odd ratios for comparing each of the (K - 1) categories with the reference category. Since the age factor represented by the three indicator variables includes an age category for each member of the sample, no reduction of sample size occurs in using indicator variables. Similarly, a set of indicator variables can be constructed for any multilevel categorical variable (of either the nominal or ordinal types). Such categorical variables will include (K - 1) indicator variables, where K equals the number of levels of the categorical variable.

Irregular Teachers

See Regular Teachers vs. Irregular Teachers

Irregular/Part-Time Teachers vs. Regular/Full-Time Teachers

A public school teacher's employment status can be (a) regular versus irregular (i.e., as an itinerant or long-term substitute teacher), and (b) full or part time. Teachers who have regular full-time positions are defined as regular/full-time teachers. All other teachers (i.e., those with irregular and/or part-time positions) are defined as irregular/part-time teachers. [Individuals who are appointed as full-time regular teachers are assumed to have the most desirable positions in terms of stability, pay, and prestige, while teachers who have irregular and/or part-time appointments are assumed to have less desirable positions.]

Logistic Regression

A type of regression specifically designed for analyzing data with a dichotomous dependent variable and one or more independent variables. Independent variables may be either continuous or categorical. See also the text by Hosmer and Lemeshow (1989).

Main Teaching Assignment (MTA)

The main teaching assignment of a teacher was defined as a teacher's selection of one of 54 subject matter assignment options provided by the Public School Teacher Questionnaire of SASS (excluding prekindergarten). 11 of which were defined as Special Education while the remaining 43 were classified in this study as General Education.

Major/Minor in MTA

Major/minor in MTA was defined as dichotomous variable: teachers who had earned any degree at the bachelors or higher level with a major or minor field of study that corresponded with the subject matter of their main teaching assignment, versus teachers whose majors or minors did not so correspond. See Main Teaching Assignment.

Marital Status

Marital status was defined as a dichotomous variable: teachers whose current marital status was married, versus teachers with any other current marital status.

Not Become Teacher

Not become teacher was defined as a dichotomous variable: teachers who most likely would not become teachers again if they could go back to their college days and start over, versus teachers who probably would become a teacher again under these circumstances.

Odds Ratio (OR)

General: The odds ratio (OR) is defined as the chances (i.e., odds) of one event (e.g., Event A) to the odds of a different comparison event (e.g., Event B). The odds of an event are defined as the probability of the event (p) divided by ($1 - p$). An OR is the ratio of the odds of an Event A ($p/(1-p)$) to the odds of an event B ($p/(1-p)$). Consequently, ORs can range from a lower limit of 0.00 to an upper limit of infinity. An OR is an indicator of the strength of association between two binary variables.

OR > 1.00: An OR > 1.00 means that the odds of an Event A are greater than the odds of an Event B. For example, suppose the proportion of continuing teachers who are fully certified (as contrasted with being partly certified) is 0.95 (an Event A). Next suppose the proportion of entering teachers who are fully certified is 0.80 (an Event B). The ratio of the odds (OR) of this Event A [$p/(1-p)$,or .95/(1-.95) = 19] to the odds of this Event B [$p/(1-p)$, or .80/(1-.80) = 4)] is therefore 19/4, or 4.75. This means that the chances (odds) of a continuing teacher being fully certified are almost five times higher (OR = 4.75) than the chances (odds) of an entering teacher being fully certified.

OR = 1.00: An OR = 1.00 means that the odds of an Event A are equal to the odds of an Event B.

OR < 1.00: An OR < 1.00 means that the odds of an Event A are less than the odds of an Event B. For example, suppose that the ratio of the odds of a continuing teacher being a female (an Event A) to the odds of an entering teacher being a female (an Event B) is 0.50 (OR = 0.50). This means that the odds of being a female continuing teacher are only half as great as the odds of being a female entering teacher. By computing the reciprocal of an OR < 1.00 such as this (i.e., 1.00/.50 = 2.00), it can be converted to the odds of the more likely event (this Event B) to the less likely event (this Event A). In this example, the converted OR = 2.00 means that the chances of an entering teacher being a female instead of a male are twice as great as the same odds for continuing teachers. Similarly, to compare the magnitude of an OR < 1.00 for one predictor variable on the same metric with the magnitude of an OR > than 1.00 for a different predictor variable, compute the reciprocal of the OR < 1.00 just for comparison purposes.

Other Major/No Degree

See Teacher Preparation Major

Partly-Certified Teachers

See Fully-Certified vs. Partly-Certified Teachers

Part-Time Teachers

See Full-Time Teachers

Private School Migrant Teachers

Private school migrant teachers were defined as private school teachers in one year who transferred to a public school teaching position the following year.

Race/Ethnicity

Race/ethnicity was defined as a dichotomous variable: teachers who were White (non-hispanic), versus all minority teachers.

Ratio of the Odds

See Odds Ratio.

Recent Graduates

Recent graduates were defined as teachers who earned a college or university degree at the bachelor's or higher level during the most recent one-year period. Recent graduates could be continuing teachers, entering experienced teachers, or entering first-time teachers.

Reentering Experienced Teachers

Reentering experienced teachers were defined as entering teachers in one year who (a) were not employed as teachers in either a public or private school during the prior year, and (b) had prior experience as regular, itinerant, or long-term substitute teachers in either public or private schools. See Experienced Teachers.

Region

Region was defined as four areas of the United States. The four areas defined by clusters of states were as follows:

Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont

Midwest: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin

South: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia

West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

Regular vs. Irregular Teachers

Regular teachers were defined a teachers who reported being employed as regular teachers in public schools. All teachers who reported being employed as itinerant or long-term substitute teachers in public schools were defined as irregular teachers. [Short-term substitute teachers, student teachers, teachers aides, and other school staff members were not defined as teachers.]

Regular/Full-Time Teachers

See Irregular/Part-Time Teachers

Salary (Deciles)

The academic year base salary of teachers in dollars was converted to ranked deciles for each of the three SASS years based on SASS sample sizes (not national estimates, as usual). The upper and lower limits for each of the decile categories for the 1993-94 school year are shown in Tables 22 and 24.

Salary (Trichotomous)

The academic year base salary (trichotomous) of teachers was defined as a three-category continuous variable in which salary in dollars is scaled from low to high, as follows: low (the first three salary deciles ranging from $0 through $25,000), medium (the fourth through seventh salary deciles ranging from $25,001 trough $35,999), and high (the last three salary deciles ranging from $36,000 and up). [The salary category definitions given here were based on 1993-94 SASS data.]

Sector

Sector refers to the dimension of public versus private schools. Public schools are in the public sector, while private schools are in the private sector.

Sex

Sex was defined as a dichotomous variable: teachers who were male versus teachers who were female.

Sources of Teacher Supply

Teachers employed in public schools in any particular year come from various sources of supply. Most will be continuing as employed teachers in public schools from the prior year (see Continuing Teachers). Others will not have been so employed the prior year, but will be entering teaching employment in public schools for that particular year (see Entering Teachers). Entering teachers come from various sources. Some may be first-time teachers (see First-Time Teachers). Of these, some may be recent degree graduates, while others may be delayed entrants (see Recent Graduates and Delayed Entrants). Other entering teachers may have had prior teaching experience (see Reentering Experienced Teachers and Private School Migrant Teachers).

Teacher

In keeping with the SASS definition, a teacher was any individual employed either full-time or part-time at a school who reported their main assignment as teaching in any grade(s) K - 12, including itinerant teachers and long-term substitutes. Excluded from this definition of a teacher were individuals who identified their main assignment as a pre-kindergarten teacher, short-term substitute, student teacher, teacher aide, and a non-teaching specialist of any kind.

Teacher Characteristic Variables

Teacher characteristic variables were attributes specifically of teachers such as their demographic characteristics and their qualifications for being employed as teachers.

Teacher Control

Teacher control was defined as a composite dichotomous variable: teachers reporting a high degree of control in his/her classroom averaged over various student instruction, assessment, and discipline factors, vs. teachers who reported only moderate or low control over such classroom factors.

Teacher Employment Variables

Teacher employment variables were attributes of the work environment of teachers including their employment status, salary, teaching assignment, type of community in which a teacher's school was located, etc.

Teacher Preparation Major vs. Other Major/No Degree

Teacher preparation major versus other major/not degree was a dichotomous variable: teachers who had earned a degree with a major in a field of teacher preparation, versus teachers who had earned a degree with major in any other field.

Teacher Supply

See Sources of Teacher Supply.

Teacher Turnover

Teacher turnover is a generic term encompassing the following three major changes in a teacher's status from one year to the next: School Transfer of Teachers (Movers), Teaching Assignment Transfer (Switchers), and Exit Attrition (Leavers).

Teaching Field

Teaching field was defined by five general categories of teaching that represented groupings of related main teaching assignments (see Main Teaching Assignments). The 1990-91 and 1993-94 SASSs recognized 53 main teaching assignment fields in grades K - 12, including one termed "all others." These 53 main teaching assignments were grouped into five teaching fields as follows:

General Elementary: Kindergarten, General elementary, Bilingual education, Reading.

General Secondary: American Indian/Native American studies, Art, Basic skills and remedial education, Computer science, Dance, Drama/theater, English/language arts, English as a second language, Gifted, Journalism, Mathematics, Military science, Music, Philosophy, Religion, Social studies/Social science (including history), French, German, Latin, Russian, Spanish, Other foreign language, Biology/life science, Chemistry, Geology/earth science/space science, Physical science, Physics, General and all other science, All others.

Physical Education: Physical education, Health.

Business/Vocational Education: Home economics, Accounting, Agriculture, Business/marketing, Health occupations, Industrial arts, Trade and industry, Technical, Other vocational/technical education.

Special Education: Special education (general), Emotionally disturbed, Mentally retarded, Speech/language impaired, Deaf and hard-of-hearing, Visually handicapped, Orthopedically impaired, Mildly handicapped, Severely handicapped, Specific learning disabilities, Other special education.

Teaching Level

Teaching level (i.e., the level at which a teacher taught) was defined as a dichotomous variable based on the grade(s) a teacher was assigned to teach instead of on the type of schools in which they taught: secondary teaching level teachers (mostly 9th through 12th grades) versus elementary level teachers (mostly K through 6th grades). Teaching level was coded by NCES based on a complex set of criteria that assigned 7th and 8th grade teachers to either the secondary or elementary level depending on an algorithm described by Henke, Choy, Geis, & Broughman (1996, Appendix C, p. 201).

Transitional Teachers

See Established Teachers